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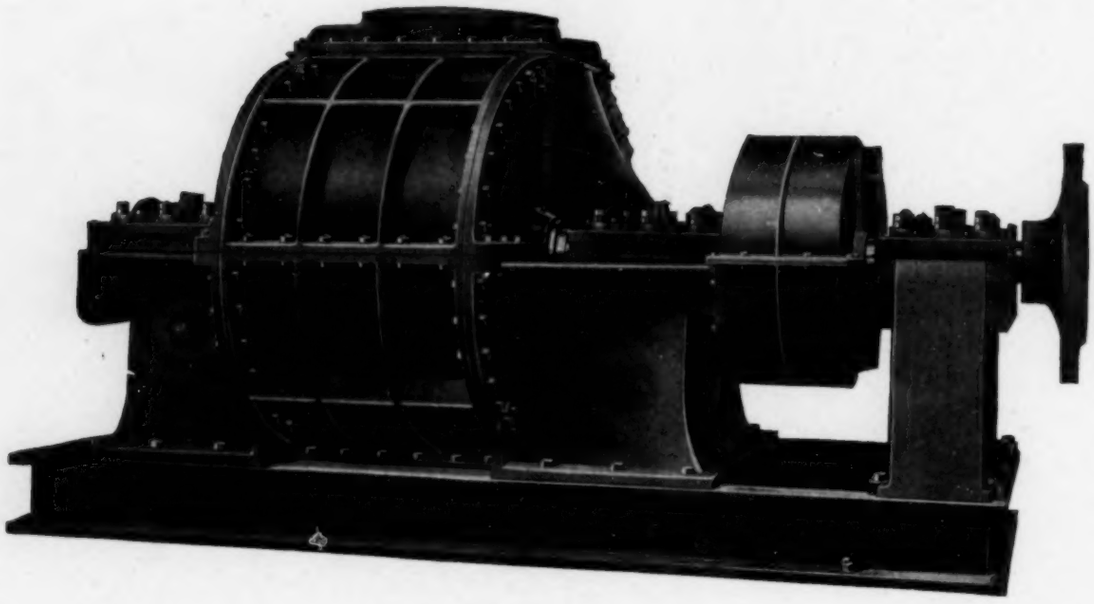
Advertisers' Index, pages 178-179
Contents, page 644 (Editorial)
"Where-to-Buy", page 98
Engineering Directory, pages 142-143
Classified Advertisements, pages 153-177

"CONNERSVILLE"



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NEW YORK
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THE IRON TRADE REVIEW

Vol. LXIII Cleveland, September 19, 1918 *No. 12*

Pershing's Victory Spurs Industry

Tremendous New Requirements Pressed Upon Mills and Furnaces by American Success—Old Orders Are Speeded Ahead—Some Advances Vigorously Sought at Price Conference at Washington—Implement Steel Concession Settled

THE echoes of the week's inspiring success of American arms in France is reverberating through the iron and steel industry. In line with the determination of the allies to press their advantage obtained over the enemy in recent weeks, renewed concentration on the production of munitions is apparent. The speeding up of the output of primary war supplies recently sought is being further accelerated. New and urgent demands which can be measured by the millions of tons, are being laid upon the works and furnaces. Large new orders for shell steel have been placed or are in sight. An example of these rush requirements is the satisfaction by one large mill within a period of several days of an order for 20,000 tons of 80-pound rails for General Pershing's forces. With the spear of the American advance pointing toward the Longwy-Briey ore basin in Lorraine, the main prop of German war industry, the possibilities of the situation are appreciated intimately by the whole iron and steel industry. An inspiration to greater immediate effort is the result.

Higher Prices Are Asked

The paramount question of production is bound up closely with Thursday's conference at Washington between the price-fixing committee of the war industries board and representatives of the producers for the settlement of fourth quarter prices. Special efforts are being made to obtain advances in pig iron and iron ore for the relief of those producers who report their operations are dipping below the cost line. In pig iron this tonnage is put at 20 per cent of that made for the market, or about 2,300,000 tons annually. Claims of merchant iron and ore producers are being pressed by committees of their own number which have been named to join at the conference with the regular representatives of the industry. The alternative of a $5 uniform advance or an increase of from $2 to $5 varying with the district according to the costs of output are being presented by the merchant furnaces. In iron ore, an advance of $1 to apply to sales over the coming year is being petitioned for. Few requests are expected to be made in connection with the finished steel schedule, although if advances are allowed on steelmaking pig iron, the effect would be to upset the whole structure of mill prices. A new fixed price that may be announced is that on standard rails which has remained unsettled up to this date.

Special Prices Go Through

Chicago announces that the special concessions to the farming implement manufacturers which have been the subject of much discussion in the industry, largely unfavorable, finally have been settled upon. Beside the $5 per ton reduction on bars, shafting is to go in at 8 points, or $8 per ton under the official maximum level, and similar allowances are to be made on special implement sections. These reductions affect contracts made since July 1.

Watch Coke Carefully

The fuel administration is taking decisive steps to maintain quality and increase coke output. Two producers recently ordered to make allowances for inferior coke supplied to various furnaces during the past several months will refund $1 to $1.50 per ton. Arrangements whereby the Frick beehive ovens in the Connellsville field are to be kept in operation will give the fuel administration 18,000 to 20,000 tons of coke monthly for distribution where it will be needed most.

To help rolling mills to obtain their supplies, a price of $21, delivered, has been allowed by the scrap committee on turnings and borings for use by these plants. This exception allows the iron mills to pay $2 more per ton for their supplies. The new price already is being offered by dealers.

SEPTEMBER 19, 1918

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

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IN THIS ISSUE

PAGE

IRON AND STEEL MARKET REVIEW 643
EDITORIALS 644, 645
IRON AND STEEL PRICES 646, 694
INDEX TO MARKET REPORTS 646
IRON AND STEEL MARKETS 647
MAKING DUMMY SHELLS FOR ARMY 659
STRUCTURAL CAUSES OF RAIL FISSURES 662
STEEL FOR ALLIED AIRCRAFT 663
Joint Anglo-American Specifications Are Being Perfected—Inspectors Will be Confined to Definite Limits.
ADVANTAGES OF FUEL OIL OVER COAL 665
KEY TO PEACE IN IRON OF LORRAINE 673
BOOSTS STANDARDIZATION OF MOTORS 675
Association of Iron and Steel Electrical Engineers in Convention at Baltimore Discuss Designs and Ratings.
WILSON TO PUNISH DISLOYAL LABOR 677
PRIORITY IN WAR INDUSTRY, THIRD INSTALLMENT 678
Automatic Classifications. How They Originated. How They Are Applied. Position of Subsidiary Contracts Shown.

America Drives for Lorraine Ores

IT MAY have been only a coincidence that the central powers made their greatest drive for peace within 48 hours of the time the American forces wiped out the St. Mihiel salient and pressed on toward the iron fields of Lorraine, but the events occurred in logical sequence considering the fact that the loss of those fields would be a death-blow to Prussian hopes. Indeed, it may have been more than a coincidence that Germnay should have consented to the Austrian proposal for preliminary peace negotiations, if it did not actually inspire it, as the Prussian war lords realized the force back of the American drive at their country's most vital spot. The proposal serves two aims from the German viewpoint: It will either cause the allies to hesitate and thus give Germany a chance to collect herself, or it will convince the war-wearied German people that they must continue to fight; either as a play for time or as a play on the emotions of the people it serves the Prussian purpose, according to the Prussian way of looking at it.

It was characteristic that the first drive of the American army "going it alone" should have been at the heart of the situation, for as an expert of the United States geological survey points out in this issue of THE IRON TRADE REVIEW, "if the ores of the Lorraine district be taken by force of arms, peace will follow almost at once." The importance of the military operation in this respect is also emphasized by General March, chief of staff; the mineral resources lying on the border of France and Germany long having been recognized as the foundation of German industry and of the Prussian military machine. The yield in iron and steel from the lands stolen from France in 1870 was so great that for some years before the war Germany had much more than she could require for her own purposes and exported a large amount. Germany exported only finished iron and steel and manufactures thereof. Her industrial wealth was swelled by the process of converting the ore to finished products. She used not only all the ore within her own boundaries but traded coal to France for more, while France exported most of her ore instead of utilizing it at home.

The problem goes further than mere possession of the mineral lands; it involves economic regulations with regard to the disposal of the ore and the coal, lying adjacent to it. France, given the ore resources, cannot compete against the United States or England, in the opinion of competent observers, because the metallurgical positions of these two nations will be vastly superior to her own after the war, but after supplying all her own requirements France, will have 4,000,000 tons of steel annually which she must dispose of in competition with Germany.

The four great steel districts of Germany: Metz, Saarbrucken, Luxemburg and Westphalia, now pouring forth their munitions for the Kaiser's minions, are founded on the minette ore field with Briey as its base. In 1913 this field yielded 45,000,000 tons of ore, equivalent to 15,000,000 tons of pig iron, of which Germany mined 21,000,000 tons, Luxemburg 6,500,000, and France 17,500,000. In that year Germany produced 28,600,000 tons of iron ore, while France produced 22,000,000 tons, 15,000,000 coming from the part of the Briey basin left to her by the treaty of Frankfort. By seizing all of these lands at the outbreak of the war in 1914 Germany added to her resources all of France's and is now estimated to be producing 49,000,000 tons of iron ore annually, all but 7,000,000 tons of which come from the Briey basin—toward which the American troops are heading.

A Timely Warning to Labor

COMPOUNDING demands by labor in this country have been reaching the point where it was inevitable that the government would be obliged to take a firmer stand on downright profiteering by the unions unless it was willing to let the regulation of war production pass out of its hands.

President Wilson's vigorous and straightforward rebuke to the striking machinists at Bridge-

port, Conn., consequently is not surprising. If anything it is overdue. The case of the Bridgeport strikers was particularly flagrant. They refused to accept the decision by arbitration under the machinery of the war labor board which they individually and as an organization, were pledged to do. The President makes it clear that the government expects the unions to be bound by their agreements to submit questions of wages and terms of employment to the war labor board and abide by the results. The consequences for the individual members who refuse to keep the faith are to be considerable yet only just. The strikers are to be barred from employment in any war industry in the community in which the strike occurs for a period of one year; the United States employment service will decline to obtain employment for them in any war industry in the country as well as in any work for the army, navy, shipping board and railroad administration or other government agencies; finally they are to be denied any claim to military exemption through local draft boards.

The President has adopted the right and only course. Obstinate, bull-dozing tactics by labor have gone to lengths in this war that in many cases even would scandalize peace time excesses. Yet the issues at stake which hang upon the harmonious performance of industry, are vastly more vital and important to the individual, including labor. If the "work or fight" slogan means anything, it calls for the sternest policy on the part of the government towards those who wilfully imperil the country's cause in war by putting their individual cupidity above reason and common sense.

Using That Sixth Sense

WITH the distribution of the government's requirements for semisteel shells another obligation descends upon the inspection division of the ordnance department. The lot of the ordnance inspector is not a happy one. Some few unfortunate selections in the personnel of minor inspectors, and that friction which may always be said to accompany the delegation of authority within the domain of another, have caused this condition. Manufacturers have the age old distaste for anything which may be remotely construed as a reflection on their integrity. However far removed the inspection may be from this interpretation the feeling consciously or subconsciously remains.

The inspectors in some degree contribute their share to this aloofness. Gathered from many callings into strange associations and delegated with the responsibility and authority of a government department, the really surprising feature is that so many have been successful. A barber does not become a heat treatment expert over night, nor does a salesman of stoves possess by divine right the minute knowledge of the inherent qualities of good steel. It has been easy for facetious workmen to induce such inspectors to set down the amount of "platinum" added in the ladle and to betray them into blunders which have done nothing toward promoting the concord necessary for the army's good.

A British munitions inspector scoffed at for his lack of previous technical training was asked if he ever made any forgings. He replied, "No, and I have never laid an egg, but I can tell a good one." The exercise of common sense has enabled many to become efficient and valuable inspectors.

With the wide distribution of the semisteel orders, many foundries will have their first intimate acquaintance with the ordnance inspectional force. The specifications are sufficiently free from highly technical requirements to render the task of the inspector less difficult. Fortunately the chemical requirements have been subordinated and the physical properties alone will determine the status of each casting. Manufacturers and inspectors alike constantly should endeavor through the exercise of common sense to realize that their obligations are parallel. Their task is to see that no single shell shall be passed which may endanger the safety of a gun or the lives of its crew. With the extension of the inspection division to handle the semisteel shell program, great care should be used by the department to secure men with a maximum of this same common sense.

Where War Has Brought Economy

THE administration of railroad properties by the government has been in effect about five months yet it is too soon to form definite opinions of the permanent value of the change. There should be no division of opinion as to the wisdom of the government controlling the roads for war purposes but whether continuance of that policy after war has ceased, would be a sensible move is a moot question.

Certainly some good effects have been obtained by concentrated control, particularly in the elimination of duplicated effort. Curtailment of duplicate ticket offices and dropping of solicitors, useless under a unified control, have resulted in savings of about $25,000,000 annually. Rerouting of traffic has saved much useless hauling of freight. One instance is adduced of a saving of 195 miles each for 9000 cars moving between two important cities.

The average carload has been increased from 26.2 tons to 28.5 tons by better attention to capacity loading, a gain of 8.8 per cent. This equivalent to the addition of 211,200 freight cars to the total equipment of all lines. Inasmuch as the government's order for new equipment was for only 100,000 cars the result of better loading has been of more assistance than the service of the new cars.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 594

PIG IRON

Bessemer, valley	$35.20
Bessemer, Pittsburgh	36.60
Base, Pittsburgh	33.40
Base, eastern Pa.	32.00
Base, Buffalo	32.00
Malleable, Pittsburgh	34.90
Malleable, Chicago	33.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $33 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 2 Northern foundry, and No. 2 southern), base plus 50c.

2.75 to 3.25 silicon (No. 1X, No. 2, soft), base plus $1.50.

Over 3.25 silicon, $34.50, plus $1.00 for each ½ per cent of silicon.

No. 1X, Phila.	35.25 to 35.50
No. 2 foundry, Pittsburgh	34.40
No. 2 foundry, Cleveland	33.00
No. 2 foundry, Ironton	33.00
No. 1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.25 to 34.50
No. 2X foundry, N. J. Tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.50
No. 2 plain, Philadelphia	33.75 to 34.00
No. 2 plain, N. J. Tide	33.75 to 34.00
No. 2 southern Birmingham	33.00 to 33.50
No. 2 southern, Cincinnati	37.10
No. 2 southern, Chicago	38.50
No. 2 southern, Phila.	40.10
No. 2 southern, Cleveland	38.50
No. 2 southern, Boston	41.00
No. 2 southern, St. Louis	39.75
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	37.60
Virginia, No. 2X, Jersey City	37.90
Virginia, No. 2X, Boston	38.20
Gray forge, Pittsburgh	33.40
Silveries, 8 per cent, furnace	45.50
Silveries, 8 per cent, Chicago	48.50
Low phos, standard, Phila.	56.00
Low phos, Lebanon, furnace	53.00 to 52.00
Low phos, Pittsburgh standard	54.40
Charcoal, Superior, Chicago	37.70 to 38.00
Charcoal, Superior, Buffalo	37.50
Charcoal, southern to 2 per cent silicon	50.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

FERROALLOYS

Ferromanganese, 70 per cent delivered	250.00
Spiegel, 16 per cent fur., spot	75.00
Spiegel, contracts, furnace	75.00
Ferrocarbon, titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, third quarter, Pitts.	150.00 to 152.50
Ferrosilicon, 50 per cent, Pitts., remainder of 1918	150.00 to 152.50
Bessemer ferrosilicon, 10 per cent	55.00
Bessemer ferrosilicon, 11 per cent	58.30
Bessemer ferrosilicon, 12 per cent	61.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	51.30
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.80

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.50
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.23c
Structural shapes, N. Y.	3.245c
Structural shapes, Chgo.	3.27c
Tank plates, Chicago	3.52c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.48c
Tank plates, New York	3.495c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	3.17c
Bars, soft steel, New York	3.145c
Bars, soft steel, Phila.	3.13c
Bar iron, Phila.	3.73c
Bar iron, Chicago	3.50c
Bar iron, Cleveland	3.67c
Bar iron, New York	3.745c
Bar iron, Pittsburgh	3.50c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, Eight, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	4.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

Market Report Index

	PAGE
Weekly Market Review	643
Pig Iron	647
Coke	649
Scrap	650
Merchant and Cast Iron Pipe	651
Semifinished Steel	651
Ferroalloys	652
Nuts, Bolts and Rivets	652
Bars	652
Plates	653
Tin Plate	653
Structural Shapes	654
Wire	654
Sheets	655
Cars and Track Materials	655
Nonferrous Markets	658
Refractories	681
Coke By-Products	683
Machine Tools	686

SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.52c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.52c
No. 10, open-hearth, Phila.	4.48c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

	Black Per cent off	Galv. Per cent off
Base, Pittsburgh		
¾ to 3 in., butt, steel	51	37½
¾ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	64.80
Six-inch and over, Chicago	61.80
Four-inch, New York	65.70
Six-inch and over, N. Y.	62.70
Four-inch, Birmingham	58.00
Six-inch and over, Birmingham	55.00

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	3.50c
Hot rolled strip steel, Pitts.	3.50c
Hot rolled strip steel, Pitts. stamping quality	4.00c
Shafting, Pitts., carloads	17 off to list
Cotton ties, Sept., per bundle	$1.95

RIVETS

Structural rivets, Pittsburgh	4.40c
Boiler rivets, Pittsburgh	4.50c
Rivets ⅞ in. and small., Pitts.	50 and 10 off

NUTS AND BOLTS

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50-5 off
Cut thread	40-10-5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50-10-5 off
Cut thread	50-5 off
Larger and longer	40-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60-10-10 off
Cold pressed semifinished hexagon nuts ½ in. and smaller	70-5 off
Gimlet and cone point lag screws	50-10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products September 18, average for August 1918, average for June 1918, and average for September 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices Sept. 18, 1918	Average prices Aug., 1918	June, 1918	Sept., 1917
Bessemer pig iron, Pittsburgh	$ 36.60	$36.60	$36.38	$48.27
Basic pig iron, Pittsburgh	33.40	33.40	33.17	43.95
*No. 2 Foundry pig iron, Pittsburgh	34.40	34.40	34.17	48.95
*No. 2, Foundry pig iron, Chicago	33.00	33.00	33.00	49.50
Lake Superior charcoal, Chicago	37.70	37.70	37.50	59.50
Malleable, valley	33.50	34.90	34.67	50.57
Malleable, Chicago	33.50	33.50	33.50	49.50
**Southern, No. 2, Birmingham	33.50	33.50	33.50	43.50
*Southern Ohio No. 2, Ironton	33.00	33.00	33.00	49.25
Basic, eastern Pa.	32.00	32.00	32.00	49.50
**No. 2X Virginia, furnace	33.50	33.50	33.50	59.75
**No. 2X foundry, Philadelphia	34.50	34.50	34.25	52.25
Ferromanganese, 70%, delivered	250.00	250.00	250.00	378.00
Bessemer billets, Pittsburgh	47.50	47.50	47.50	73.75
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	82.50
Open-hearth sheet bars, Pittsburgh	51.00	51.00	51.00	82.50
Open-hearth billets, Pittsburgh	47.50	47.50	47.50	73.75
Steel bars, Pittsburgh	2.90	2.90	2.90	3.72
Steel bars, Chicago	3.17	3.17	2.90	4.10
Iron bars, Philadelphia	3.73	3.73	3.685	4.935
Iron bars, Cleveland	$ 3.64	3.64	3.64	4.59
Iron bars, Chicago mill	3.50	3.50	3.50	4.50
Beams, Chicago	3.27	3.27	3.00	4.46
Beams, Pittsburgh	3.00	3.00	3.00	3.75
Beams, Philadelphia	3.23	3.23	3.185	4.435
Tank plates, Pittsburgh	3.25	3.25	3.25	6.81
Tank plates, Chicago	3.52	3.52	3.25	7.33
Tank plates, Philadelphia	3.48	3.48	3.435	7.75
Sheets, blk., No. 28, Pittsburgh	5.00	5.00	5.00	8.75
Sheets, blue anld., No. 10, Pittsburgh	4.25	4.25	4.25	8.50
Sheets, galv., No. 28, Pittsburgh	6.25	6.25	6.25	9.68
Wire nails, Pittsburgh	3.50	3.50	3.50	4.60
Connellsville furnace coke	6.00	6.00	6.09	9.02
Connellsville foundry coke	7.00	7.00	7.00	12.50
Heavy melting steel, Pittsburgh	29.00	29.00	29.00	35.50
Heavy melting steel, eastern Pa.	28.50	28.50	28.50	31.25
Heavy melting steel, Chicago	29.00	29.00	29.00	32.63
No. 1 wrought, eastern Pa.	34.00	34.00	34.00	41.50
No. 1 wrought, Chicago	33.50	33.50	33.50	40.50
Rerolling rails, Chicago	34.00	34.00	34.00	41.25

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

(For Additional Prices See Page 694.)

Iron Makers Await Action on Prices

Future Operations of High Cost Producers Bound up With Last Quarter Schedule—Iron Now Being Allocated for 1919 Delivery—Furnaces Encounter Greater Difficulty in Meeting Old Obligations

Philadelphia, Sept. 17.—Prices of merchant iron to prevail during the final quarter have been the absorbing topic in the iron market the past week. It is understood that producers will petition the price fixing committee of the war industries board for a uniform advance in merchant iron or a varying differential above the present price in different districts, which would be regulated to include the highest cost producers in these territories. This differential would range from $2 in the central district to $5 in Tennessee and Virginia and would make the No. 2 foundry base from $35 to $38 furnace. If a uniform advance is favored, it is recommended that this be $5, to include the highest cost furnaces of the country, which would be stacks in Virginia and Tennessee. The merchant furnace operators will be represented at the meeting by a committee of their own, along with the general committee of the institute, to present their argument. If either of these alternatives is adopted, it will materially advance the cost of basic iron to consumers and to that extent will affect the whole structure of steel prices which had not been expected to be changed materially for the next quarter, although many smaller steel plants had been urging upward revision. Low phosphorus iron now is being allocated among furnaces in this district for delivery over the first half of 1919. Allocations of other grades for this year continue on the usual scale. One sale of 600 tons of off grade low phos iron was made by a producer in this district. The inquiry for 40,000 tons of basic iron for first quarter for the American Bridge Co. and for the American Steel & Wire Co. continues before sellers.

Advances to Be Asked

New York, Sept. 16.—The pig iron price problem continues to engage extremely deep interest here. While the forthcoming recommendations of the general committee of the institute to the war industries board are not known, trade opinion does not indicate strongly that a general advance in pig iron prices will be granted, followed as it necessarily would be by changes all through the iron and steel price structure. At the same time, the predicament of the Tennessee, Virginia and other high cost producers is fully recognized and conjecture turns to expedients which might help their situation. Some talk still is heard of a zoning arrangement, under which the various high cost producers would be grouped and higher prices allowed them. It is understood that the general committee of iron producers which will lay their case before the war industries board Thursday will ask for an advance of prices varying by district and averaging according to the costs of the individual makers in that district. The same advance will be asked for Virginia and Tennessee and a varied differential for the eastern district, Alabama and the central territory. Allocations in this district have continued the past week in the usual compartively small tonnages.

Clearing Up Their Orders

Buffalo, Sept. 17.—Furnaces are working hard to clear their books and get into the winter business. The ore is coming in in good shape and cars just now are described as fairly plentiful, though furnacemen expect a blue winter as regards trans-

portation facilities. A local interest which had had a furnace working on ferromanganese has switched to malleable and one which was on malleable has switched to foundry within the past ten days. This interest is gradually increasing its mill capacity and is now turning out large orders of billets for shells. The same local mill receives gradual allocations right along and last week accepted a few rather small tonnages of plates. Some pig iron was also allocated during the week, mostly in 500 to 1000 ton lots. A furnace which received some of this pig iron allocation has also accepted a small amount of 1919 business of foundry iron, from some consumers who feel more satisfied in having their names on the order book though it is understood government needs at any time will supersede this business.

Allocating Iron For 1919

Cleveland, Sept. 17.—Allocations of iron for 1919 delivery are becoming more numerous. Considerable tonnage placed in the week was for that delivery. Consumers of low phosphorus irons especially are becoming interested in their next year's supply. Some tonnage already has been placed for that period in their behalf. With but a comparatively minor tonnage, however, the 997,000 tons of iron of all grades which have been allocated by the pig iron committee since May 1, have been for this year's delivery. This tonnage of iron represents the total after the addition of 82,000 tons during the past week. These new allocations include 33,000 tons of basic, 25,000 tons of foundry, 16,000 tons of malleable, 8000 tons of bessemer, 6200 tons of low phosphorus and 1900 tons of charcoal. The requests for government uses continue to flow in upon the committee in an ever-rising stream. A large number of new requests of this character now are pending including one lot of 13,000 tons of foundry and another of 13,000 tons of malleable for a large consumer with several plants. Considerable difficulty is being encountered by the committee in locating a sufficient tonnage of malleable to fill all requests made upon it. Several furnaces which customarily are producers of this grade, now are running on other grades. Open market selling for 1919 has tapered off. Some of the furnaces report fresh shortages of coke and the Canal Dover was obliged to bank today for that cause.

Deliveries Are Delayed

Chicago, Sept. 17.—Allocation of pig iron tonnages for essential purposes has reached a point where northern makers are falling behind on deliveries on contract obligations. Not only is the total tonnage increasing, but the kind of iron required is having an effect in forcing furnaces to make grades they would not ordinarily turn out, but which are required at a given time to meet the demand of users whom the government has sought to help. Thus, when a furnace should be making foundry iron to meet the needs of its regular trade, the government is likely to demand a large tonnage of malleable or basic, making it necessary for the operation to be changed over to either of these grades. Foundry users thus are forced to wait until later before they can obtain their supplies. Selling of 1919 iron from northern stacks is being done slowly and in strict accordance with the tonnages formerly bought by the various melters. Southern iron now costs much more than northern and many consumers seek to buy from northern makers a tonnage equal to their former purchases of both northern and southern. Selling of southern iron is at a standstill and practically nothing is moving in that market at present. Even the occasional small lots of high-sulphur iron that have been coming forward seem to have ceased and none has been received in this market by some dealers in a number of days. Melters, both large and small, seem to be resting easy as to their 1919 tonnage and neither class exhibits any fear as to their ability to obtain iron for essential uses. Some of each class have covered and others have not asked for contracts for that delivery.

Foundries In Better Shape

Cincinnati, Sept. 16.—The situation has become so intense that a very small quantity of iron is going into the nonessential industries. Occasionally a foundry has some important work in hand and finds that a little molten metal is to be left over. This is poured into molds for making small castings. It may be said, however, that this endeavor to "save the crumbs," so to speak, is considered commendable, although close calculations reduce this consumption of iron to less than 5 per cent. A matter of vital importance is the shipment of iron to consumers. Lately there has been a speeding up that has enabled a few foundries to add to their supplies. It cannot yet be said that accumulated stocks are sufficient to allay all uneasiness for the future, but the situation as far as the foundries are concerned, is much better than at this time last year. Weather conditions had something to do with last year's record. Practically no contracting is being done for next year's shipment in either foundry or basic iron. No malleable sales have been made in this territory within the past week.

Pinch More Keenly Felt

St. Louis, Sept. 17.—The scarcity of iron continues to tighten on consumers outside the essential classification. The situation as it affects this district has failed utterly to improve, and buyers and sellers are becoming confirmed in the belief that things will not get better so long as the war lasts. Producers and their representatives have absolutely nothing to sell. Earlier in the month the leading southern interest disposed of small tonnages for the first half of 1919, but this allotment was absorbed by the strictly war industries. Demands from class A interests are so large that despite economy, the normal output is scarcely sufficient to their full needs. Contracts have taken every ounce of pig iron which producers in the St. Louis district will be able to turn out during the remainder of this year, and all of 1919. Stove plants and other manufacturers of specialties are slowing down to a minimum, and a canvass of the more important plants this week shows that by the end of the year operations will be suspended altogether unless these plants are able to get government work. Deliveries so far this month have been excellent, and the various mills and foundries are working at capacity.

Resting on their Oars

Birmingham, Ala., Sept. 17.—No effort whatever is being made to sell pig iron in the south, attention being given to production and to a steady movement of the product. In a word, the manufacturers in this section are resting on their oars. Orders allocated to this district together with the old orders on hand require steady production and delivery. Little comment is being made as to probability of an advance of $3 per ton on foundry iron when the revision of price list comes up this week at Washington. As to the probable make for the last quarter the indications are there will be little iron offered by southern furnaces. Inquiries are again numerous and in every instance assurance is given that the product is wanted for essential operations.

Increase Rather Expected

Pittsburgh, Sept. 17.—Some dissenting opinions are heard, but as a general rule, the belief here is that an increase will be made in pig iron

prices in Washington on Thursday. Interests in this district who have either been to the capital recently or are keping in close touch with what is going on there quote authorities as being disposed to grant that the demand for increased or even sustained production of pig iron is to be met in no other way than by the stimulus of higher prices than now prevail. No doubt exists that as a result of the higher ore, freight and labor costs that there are a good many furnace interests who either are just merely geeting back a new dollar for an old one on the present basis or are actually losing money. About the strongest argument that can be advanced against an increase in iron prices is that it might involve a revision upward of steel prices. This line of argument is met by the statement that official Washington realizes the great need of having every ton of capacity engaged and will hardly let prices stand in the way. There continues to be more or less complaint on the part of blast furnace interests over the quality of the coke that is being supplied them. In the final analysis, the fuel situation is the whole crux of pig iron production. Poor coke in nowise reflects on the makers, but rather on the kind of coal provided them for coking. The first step, therefore, in bolstering pig iron production and at the same time lessening costs will be the production of better coking coal. The next step will be in the elimination of those furnaces which investigation has found to be abnormally heavy users of fuel and do not show the results in iron production. It is to the opinion here that before long, coke tonnages will be allocated freely to efficient furnaces at the expense of those which merely consume fuel without materially helping out war production. Any tonnages of iron that may be lost in this way it is contended will be more than made good through increased tonnages by those where it is not necessary to use as much as 2800 pounds of coke to the ton of iron, which is now the case at a number of furnaces. Most of the new business in iron is through allocations.

Alexander M. Kerr, who died in Detroit on Sept. 13, at the age of 69, was one of that city's pioneer machinery men. He was superintendent of the Fulton Iron & Engine Works for 35 years prior to the organization of the Kerr Machinery Corp. He had not been active in the latter organization for the past five years.

Coke Quality is Improved

Measures Taken by Fuel Administration Bear Fruit—Screening Business Made Subject to New Regulations

Pittsburgh, Sept. 17.—Production of coke in the Connellsville district is steady, with a tendency toward a slight increase. The output, however, could be greatly increased without creating what might be called a burdensome surplus, for although the furnaces are getting enough fuel to go along from day to day, a few days' embargo on the movement from the region might well cause serious inconveniences. The furnace interests are not able to build up reserves and probably never before were they so much on a hand-to-mouth basis. The word from the Connellsville region is that as a result of the fuel administration inspection and greater care on the part of makers, the past week has seen considerable improvement in quality. The labor supply is still none too great but the car situation is fairly comfortable. Much interest exists here over the new ruling in connection with coke screenings. The first order would have suspended this business entirely, but there was a subsequent modification which permits those having contracts to go through with them at the price set in the contract. In return for this concession, the fuel administration has imposed several limitations on this branch of the business. The size of the screen must be reduced to one-half inch; the price is cut from $7.30 to $5.50 a ton for one-half inch screenings, with $3 a ton allowed for the fine coke when it is not all dirt. Another stipulation provides for inspection at the shipping point. The importance of the screened coke business is not denied, but it was growing to such proportions and so much profit was possible that it was attracting too many men away from drawing and loading coke. And although shipments were restricted to box cars, the business was interfering with the operation of the railroads to some extent.

By-product oven coke production is gaining. The Carnegie Steel Co. now has 379 ovens in at its Clairton plant. This represents five batteries of 64 ovens each and the greater part of another battery. The sixth battery will be in full this week; the seventh battery will be blown in next week, with the eighth, ninth and tenth batteries to go in in each of the successive weeks provided the coal can be obtained. There is some doubt about the coal supply owing to the scarcity of miners. By arranging to keep the beehive ovens of the Frick company in operation, the fuel administration has at its disposal 15,000 to 20,000 tons of coke monthly which it will distribute where it is needed most. Connellsville coke production for the week ended Sept. 7, was 345,210 tons, compared with 338,250 tons the previous week, according to the *Connellsville Courier*.

Watch Quality Carefully

New York, Sept. 16.—Eastern by-product coke plants are operating about 85 to 90 per cent of capacity and beehive coke plants about 60 to 70 per cent. The scarcity of labor and quality of coal are ascribed as the principal retarding factors. More rigid supervision is to be exercised over the quality both of coal and coke in the future, with a view to assisting iron and steel production.

Heavier Output

Cincinnati, Sept. 16.—Cooler weather is said to be responsible for a heavier output of coke both in the south and in other sections. Reports that have been leaking in from different sources are that workmen are now more steady since the draft age has been increased. Employers are not as willing to ask for exemption for workmen who are tardy in reporting for work. This information comes from different selling agencies and apparently sets at rest any reports as to reports that the oven operators were not able to take care of their customers who have war work in hand.

Calmer Feeling Prevails

St. Louis, Sept. 14.—The present week has been marked by no change worthy of note in the coke situation in this district. Blast furnaces are receiving adequate supplies for current use, but none has been able to do much in the way of accumulation.

Production Holding Its Own

Birmingham, Ala., Sept. 17.—While the coal output in Alabama is not up to all expectations, the coke output is holding its own. Railroad car service is not the best in the intra-district territory while the loss of the daily output at the Lewisburg mines still is being felt. There is such a strong demand for coke that every effort is being made to keep the output up to maximum.

Rolling Mill Scrap Raised

Recommendations Made That Borings and Turnings For Puddling be Advanced to $21—Offers at That Figure—General Shortage Grows

FOR COMPLETE SCRAP PRICES SEE PAGE 694.

Buffalo, Sept. 17.—News is awaited here of the action taken by the scrap subcommittee at its meeting last week, of the change recommended in the price on steel turnings and cast iron borings for rolling mill consumption. These two grades have been very active for the past week. Open-hearth consumers of the district said today they had not received any official notification of the change made, but it is understood the change will bring the price on turnings and borings for rolling mill consumption up to $21 per gross ton delivered. The change is made by reason of the desperate need of the rolling mills which are unable to obtain turnings and borings at $19. The district is flooded with letters from eastern brokers offering $21 for turnings and borings for rolling mill consumption. For the time being the price for borings and turnings will be $21 as all available material of this grade suitable for rolling mill purposes will go to them at the increased price. The market is about the same as last week, with plenty of demand and little material to supply it. No large sales are being made, dealers selling only what stocks they have available. All the material they can possibly gather can be sold at the government price. The labor situation is bad.

Supplies Still Dwindling

Pittsburgh, Sept. 17.—Demand for iron and steel scrap continues active but new business is restricted by lack of supplies. Current receipts are light and deliveries on standard contracts make for further depletion of yard stocks. Sale of 3500 tons of heavy shell turnings to a Pittsburgh district consumer is noted at $24 plus 3½ per cent commission delivered. These heavy shell turnings are the only grade that are in at all free supply. This is due to the embargo on shipments of turnings to the blast furnaces. Much disappointment prevails among scrap dealers that the war industries board did not give the trade a rating on the preference list recently issued. In view of the fact that assurances had been made that a high classification would be granted, there is a feeling that the trade has been discriminated against. Labor has been one of the crying needs of the scrap business lately and the fear is now expressed that no relief can be expected since the industry apparently has no standing with the war industries board. It is believed, however, that the importance of scrap to steel production will soon result in an amendment to the preference list, placing the industry where it properly belongs.

Want No Price Changes

Cleveland, Sept. 17.—Scrap iron and steel dealers are hopeful that prices will not be revised for the last quarter, and believe this will be one outcome of the recent meeting of the subcommittee on scrap at Philadelphia. Neither a lower nor a higher price would bring out any more scrap, it is contended. Hope also is held out that the ruling barring turnings from blast furnaces for a 30-day period ending Sept. 22, on the ground that iron ore is much more plentiful for the furnaces than scrap is for the open-hearths, will be continued. Further, dealers assert, if turnings are fed to open-hearths they are converted by one process into steel, whereas if they are shoveled into blast furnaces they are converted first into pig iron and by a second process into steel ingots. Steelmaking grades of scrap are in the heaviest demand in years, while supplies are low. Melting steel continues the grade most in demand. The shortage of foundry grades would ordinarily be termed acute, but it is not when set up against that in steelmaking metal.

Shortage is Greater

Chicago, Sept. 17.—Almost every grade of iron and steel scrap is feeling an increased shortage of material. Rolling mill grades, which have been in better supply than steel mill grades, are now much more difficult to obtain and quotations have advanced almost to the government maximum. The only weak items are borings and turnings, for which there is not as great demand in this territory as in other markets. Dealers find difficulty in obtaining tonnage to apply on old sales and melting steel sold on permits for use in eastern consuming centers is difficult to obtain, causing considerable delay in shipments. Railroads offerings are unusually slack, which is a large factor in the present shortage. The Union Pacific offers 450 tons and the Monon 520 tons.

Demand Exceeds Supply

Cincinnati, Sept. 16.—The very heavy demand for both No. 1 machine cast and No. 1 railroad wrought runs far ahead of the present supply of both of these grades. Dealers are also running somewhat short of stove plate, and this kind of scrap is apt to become more scarce. Steel turnings are holding their own, but cast borings, usually quoted with them, are not at all strong. Common labor for the sorting of scrap is still very scarce and different yards report that the new registration law has had only a small beneficial affect.

Can't Locate Material

St. Louis, Sept. 14.—Dealers in scrap iron and steel report little business of any sort for the main reason that it is impossible to get anything to sell. Less material is coming into sight than at any time in recent years. Against this scarcity is about the largest and most persistent demand ever experienced. Stocks in consumers' hands are near the vanishing point, and certain rolling mills are in positive want. The railroads are producing scantily, there being no lists to speak of before the market this week. Small tonnages are dribbling in from the country, and with the main harvesting operations out of the way, there may be a temporary stimulation in this movement. The country in this region, however, has been intensively worked over. Speaking of the scarcity a leading dealer said today that lack of labor is a large contributing factor. It is impossible to get men to prepare material for market. One of the largest yards here has under discussion plans for hiring negro women to work on its heaps. There has been considerable complaint about deliveries on contract, which dealers ascribe to the labor shortage. Prices remain strong.

Wrought In Demand

Birmingham, Ala., Sept. 17.—Wrought iron is the only grade of scrap which is bringing the government maximum price, according to dealers in the south. The industries using heavy melting steel still are fixing their own prices, practically. There has been some improvement lately in the demand for stove plate and the price has risen. While a scarcity of scrap in the larger centers of the country is still noted no business has been

placed here as a consequence. Dealers' stocks are being kept up to a fairly good average. Holders of big lots which have been sorted are asking close to the government price. Stove plate quotations have been advanced to $26, No. 1 cast to $33, and No. 1 railroad wrought to $34. The rolling mills of East Birmingham, which recently started up, have been buyers of wrought.

Special Price Is Allowed

New York, Sept. 17.—In order to relieve the shortage of borings and turnings at the rolling mills in Lebanon, Pa., a permit has been granted allowing the mills to pay $2 for these grades, or a price amounting to $2 above the present government maximum. The permit calls for a limited tonnage, and as the exact amount is not known, it is impossible to state how long these new prices will be allowed. As a result of these higher quotations, dealers' buying prices, f.o.b., New York, have advanced to $18. Mixed boring and turnings, however, are in no way affected, this material still holding at $16.25 to $16.75. Demand for all grades of scrap continues strong, with every available tonnage being snapped up as soon as offered. A dominating factor in the movement of scrap continues to be scarcity of labor.

No Base Changes Asked

Philadelphia, Sept. 17.—No matter what action is taken regarding pig iron and steel prices at Thursday's conference, the scrap trade authorities predict there will be no change in old material prices. Following the conference of the subcommittee in this city last week, it was authoritatively stated that no recommendations for higher base prices will be made to the general committee of the American Iron and Steel institute. The 30 days embargo expiring Sept. 22, on shipments of turnings to blast furnaces has assisted the steel works but has not relieved the position of the iron mills, owing to the lack of incentive to the dealers to sort out cast iron borings and wrought iron turnings for iron mill use, as the maximum price of turnings for all consumers has been $19, delivered. It is understood a special ruling has been made to remedy the situation and it is reported that an advance to $21, delivered, on wrought iron turnings and cast iron borings has been recommended. The subcommittee, however, has made no formal announsement as yet on this point. All maximum prices of scrap are being firmly maintained.

More Shell Steel Placed

Orders for 150,000 Tons for England Are Distributed—Ingots Command Good Price—Large Lot is Sold

Youngstown, O., Sept. 18.—Further tonnages of shell steel are being allocated by the American Iron and Steel institute to various mills in this country. The entire order is for the British government and amounts to approximately 150,000 tons. It will be delivered over the next three months. Shell steel makers in this district were apportioned several thousand tons. Sheet bars continue to be scarce here due principally to the shortage of pig iron. Not long ago one company here paid close to $54 per ton for ingots and converted them into sheet bars in order to keep its sheet mills in operation. It is understood that one maker here has several thousand tons of open-hearth ingots for sale. Recently additional units were added to the plant's open-hearth capacity. These increased the production to such a stage that it now has all the metal it can handle and does not have to depend on its reserve stock of ingots. Approximately 4000 tons of these ingots were disposed of last week. It is rumored a corporation in this district recently purchased 15,000 tons of open-hearth ingots for $47.50 per ton. This company's open-hearths are operating full tilt but its rolling capacity is in excess of its steel production.

Strip Output Drops Further

Pittsburgh, Sept. 17.—A further decline is noted in the output of cold rolled strip steel, few mills now running at beter than 50 per cent of capacity. This is due to the continued diversion of steel to what are considered by the government, more vital needs. Practically 100 per cent of current output is going directly or indirectly into war work. Recent changes announced by the American Iron and Steel institute on strip steel have not much significance, as little deep stamping or extra deep stamping strip steel is produced. Deep stamping strip steel will be quoted at 4.25 cents and extra deep stamping at 4.50 cents.

Allocations Still Pending

Pittsburgh, Sept. 17.—The allocation of 3800 tons of wire rods for the British government, announced about a week ago, still is unplaced. The steel for this purpose is so hard to obtain and makers already are so heavily committed, because of the heavy United States government orders for wire and wire products, that they would be pleased and much relieved if they were excused from taking any part of the allocation.

Sharp Demand Exists

Pittsburgh, Sept. 17.—Sharp demand exists for billets and a large business might be turned over if there was a sufficient supply. The shortage, which has existed for several weeks is now more acute than ever and includes small billets, which were fairly plenty before the mills began to find a use for shell steel discards. Further curtailment of sheet bar supplies is probable owing to the ever-enlarging program of the more vital of war necessities. Sheet mills cannot increase production because of their inability to secure the bars and tin bars supplies, as recently announced, are to be restricted so that after Oct. 1, the mills cannot operate more than 70 per cent of capacity.

Better Output

Than Expected Shown in Pipe—Jobbers Needs Are Supplied

Chicago, Sept. 17.—Belfield, N. Dak., will open bids Sept. 21 on 250 tons of cast iron pipe on which makers are submitting figures subject to the decision of the government as to the essential nature of the improvement. Bates & Rogers, contractors, have asked bids on 750 tons for use at the air nitrates plant at Toledo, Ohio.

Expect Price Advance

New York, Sept. 16.—Interest in the eastern cast iron pipe market centers on the activities of the price fixing committee at Washington. Makers generally are anxious for an upward revision due to the steadily increasing costs of operations and some appear firm in their belief that action in this direction will be taken.

Only Slight Drop In Output

Pittsburgh, Sept. 17.—Diversion of steel to plate and rolling mills and for shells has as yet made only a slight difference in the operations of pipe mills in this district. Makers are getting sufficient supplies of steel to meet all essential requirements and it is noted that jobbers' needs are being met more fully than in some other lines. The labor situation is quite as important a factor in the output of steel supply.

Price Concession Settled

Implement Manufacturers Finally Allowed $5 Cut on Bars and Corresponding Reductions in Shafting and Special Sections—More Bar Iron

Chicago, Sept. 17.—After much delay the concession asked by agricultural implement makers has been announced, effective on all material contracted since July 1, 1918, and covering the manufacturing year from July 31, 1918 to June 30, 1919. On contracts made prior to July 1, it is understood prices named therein will remain effective. The announcement states that steel bars shall be invoiced at $5 less than the Pittsburgh base, shafting at 25 per cent off list, discs at 7.5 cents, base, Pittsburgh, and coulters at 89 cents each, flat. These new prices are to apply on material furnished manufacturers of farm implements, coming under the head of plowing, seeding, cultivating, harvesting, gathering and threshing, to be currently used. It also includes farm wagons and buggies. Similar machinery not regularly used for farm work, such as lawn mowers, is not included in this reduction.

Allocation of shell bars has been made recently, one interest in Chicago being given 22,000 tons, which will be shipped direct to France for the manufacture of shells. Half of this tonnage will be delivered during October and the remainder in November.

Better selling of bar iron is noticeable from week to week and mills are now in much more comfortable position than earlier in the year. Tonnages sold for export will be shipped freely under export license until Oct. 1, but after that date priority certificates will be required in addition to the licenses. The situation as to hard steel bars rerolled from rails is unchanged, with continued great scarcity of rails.

Announcement by the railroad administration that the Great Northern railroad has a surplus of bar iron available from its mill in Minnesota places another railroad tonnage of bar iron in competition with merchant mills. Railroads buying for use near Duluth or St. Paul are instructed to place their orders with the Great Northern before seeking supplies from regular sources. The Santa Fe railroad is already furnishing about 200 tons per month to other railroads.

Re-inforcing Order Larger

Philadelphia, Sept. 17.—It now develops that the quantity of re-inforcing bars recently allocated for southern yards building concrete ships for the Emergency Fleet corporation was 17,000 tons instead of 15,000 tons as reported. A local mill has received specifications for 1000 tons of tie plates from the Pennsylvania railroad.

Output Still Dropping

Pittsburgh, Sept. 17.—Operations of merchant steel bar mills are still feeling the effects of the diversion of steel to other channels. One of the indepedent companies in this district is now running its bar mills on a one-turn schedule and the fear is expressed that a further curtailment will be necessary in order that the steel may be available for shells, plates and rails.

Await Official Address

Cleveland, Sept. 17.—Mill representatives in this district have not yet been advised of the final settlement of the price concession to the farm implement manufacturers as reported from Chicago. Several implement manufacturers in this district have been in touch with the mills seeking the allowance, and now that the final details have been settled as reported, they are expected to again press their case for action. Some of the representatives have raised the question where the mills are obligated to accept the cut. An allocation of 500 tons of bars for a Cleveland manufacturer of gun parts was made this week.

Meeting Essential Needs

Pittsburgh, Sept. 17.—Makers of nuts, bolts and rivets are getting just about a sufficient supply of steel bars to permit of merely filling essential business. There is a fairly good demand from regular commercial sources, but because of the volume of the government needs, manufacturers cannot give much attention to the lower priority classifications. Current operations are running between 70 and 75 per cent of capacity. Not only is the supply of steel bars restricted, but labor is insufficient. The possibility is slight that the jobbers will be able in the near future to secure larger allotments as new government orders are constantly coming in.

Government Buying Hoops

Pittsburgh, Sept. 17.—The government is a good buyer of hoop steel and between this demand, fairly free deliveries on standing orders and curtailed output through lack of sufficient steel supplies, new offerings are light. Demand for bands is for only limited tonnages but standing orders are taking care of most of the current production.

Refuse Many Inquiries

Chicago, Sept. 17.—Makers of bolts and nuts continue in a most comfortable position from the point of view of full order books and no inquiries are being considered except for occasional small lots from regular customers, which can be handled without prejudice to previous bookings. More or less difficulty is being experienced by almost all manufacturers in the matter of raw material, although this has not yet come to the point of great embarrassment.

Shaded Prices

On Spiegel Sales Reported—Market Is Not Active

Pittsburgh, Sept. 17.—Few new inquiries have come out for ferromanganese or spiegeleisen here recently. Demand on the whole is rather quiet and it is noted that one interest who was recently seeking 600 tons of ferromanganese has withdrawn the inquiry and another inquiry for 500 to 1000 tons of high grade spiegeleisen also has been recalled. Small lots of 16 per cent spiegeleisen are moving steadily at $75, furnace, for either spot or contract delivery. The McKinney Steel Co., Cleveland, has closed a contract with a Buffalo interest for 1100 tons of 70 per cent ferromanganese and 3600 tons of high grade spiegeleisen. It is understood that the spiegeleisen sold somewhat under $4 a unit but the price paid for ferromanganese is not known. Latest sales of the latter alloy were at $2.50, delivered, and this price has not been shaded so far as can be learned.

Good Lots Are Closed

New York, Sept. 17.—The McKinney Steel Co. and the Upson Nut Co. are reported to have closed for round tonnages of ferromanganese and spiegeleisen at concessions and both awards are reported to have gone to Buffalo makers. Ferromanganese prices are holding steady at the lower unit recently charged, which is $3.50 as against $4 which prevailed after the 70 per cent standard was adopted. One sale of 300 tons of ferromanganese for first half at $250 delivered was closed by a New York seller. Delayed deliveries characterize the

spiegeleisen situation. Buying is not heavy. Ferrotungsten market is strong, some makers having sold up well into November on 72 per cent. For 80 per cent ferrotungsten $2.50 to $2.60 per pound is quoted and for 85 per cent, $2.75 per pound.

Strength is shown by gravel fluorspar. This material now is being sold at $30 per ton, f.o.b. mines.

Prices Shaded Sharply

Cleveland, Sept. 17.—Sharply shaded prices are reported to have been made on important business closed in ferromanganese and spiegeliesen in this district the past week. The McKinney Steel Co. purchased 3600 tons of spiegeliesen and 1100 tons of ferromanganese for first half. It is understood that a combination price for the two metals was made which figured out considerably less than $4 per unit on the spiegeliesen. Another local buyer closed for 1200 tons of spiegeliesen and 750 tons of ferromanganese for forward delivery on somewhat similar terms. All this business is reported to have gone to a Buffalo maker.

Chicago Demand Quiet

Chicago, Sept. 17.—Buying of ferromanganese for 1919 delivery is being done steadily, but not on a large scale. Some tonnages of importance have been closed recently. Demand for ferrosilicon is strong and most makers are not in the market at present. Production of all alloys is at a satisfactory level and most users are being cared for fully.

Woodward Deal Unsettled

Birmingham, Ala., Sept. 17.—Some delay is announced on the deal whereby the Woodward Iron Co. is to erect a steel plant with government assistance and financial backing to the amount of $25,000,000. A. H. Woodward, chairman of the executive committee, Frank H. Crockard, president, and Robert Jemison, Sr., prominent stockholder of the Woodward company, were in Washington the past week and called on officials of the war industries board to discuss the matter. Steel Director Replogle was away from Washington, but a conference will be held again this week with him. The statement emanates from Washington that the production of marine engines is far under steel plates output and for that reason there is some hesitation as to further increasing steel capacity except by the development at the present plants.

Locomotive Plates Placed

Eastern Mills Receive 14,000 Tons Additional—Production Continues to Rise—Workmen Stay on Their Jobs

Philadelphia, Sept. 17.—Heavy plate allocations continue to swamp eastern plate mills. One of the new distributions calls for about 14,000 tons, covering the requirements of 700 locomotives which were recently awarded to the Baldwin Locomotive Works for the United States railroads in France. Operations among the eastern mills still range from 80 to 85 per cent of capacity. The shipyards seem to be accumulating good supplies of steel for the winter and there is little complaint from that source at the present time as to shortages of material.

Production Still Rising

Pittsburgh, Sept. 17.—The story about plates is still one of steady increase in production. There is not only the diversion of ingots away from other mills to account for this development but also comfortable weather that keeps the men quite steadfastly at their work. The increase in output, although considerable, is not as great as it might have been had there been the usual let down in the summer production. Never before have the men stayed on the job during the periods of extremely high temperatures as they have during the past summer. The result has been a hot weather production far above the average. Ship and car builders are getting full allotments of plates.

Mills At High Speed

Youngstown, O., Sept. 18.—Plate mills are operating at capacity on both direct and indirect government work. Tonnages going through one mill now are to be used for fabricating the ends of box cars. Ship plates, however, continue to exert a little pressure at some plants although the mills here as a whole have the situation pretty well in hand. Shipments of ship plates from some of the mills here have been made ahead of schedule and it is said nearby fabricators have an abundant supply of plates on hand. A large fabricator in the Pittsburgh district is inquiring for several hundred tons of 3/16-inch plates. Platemakers here have no trouble in disposing of odd lots. Buyers are taking plates as they come from the mill in any lengths or widths so long as the gage is what they want.

Enlarged Quarters Are Taken

RAPID expansion of the volume of its business in eastern districts and the resulting requirements in the way of enlarged staff and facilities have compelled THE IRON TRADE REVIEW *to abandon its New York quarters at* 508, 90 *West street, in favor of a new location at* 220 *Broadway. At that address, a very spacious and well appointed suite of offices has been occupied dating from Sept.* 15. *These quarters will be shared in connection with its associated publications including the* DAILY IRON TRADE AND METAL MARKET REPORT, THE FOUNDRY, MARINE REVIEW *and* POWER BOATING *and other publication enterprises of The Penton Publishing Co.*

Drooping Output

Already Shown in Tin Plate—Pressing Needs Are Supplied

Pittsburgh, Sept. 17.—Although the curtailment in the supply of sheet bars for the tin plate mills does not become effective until Oct. 1, operations already and beginning to taper off. Production is now nearer 90 per cent than 95 per cent and the opinion is expressed that every day from now on there will be a decline in output so that the 70 per cent basis of operations will go into effect promptly and with no inconvenience to the manufacturers. Needs of the makers of food containers are believed to be fairly well covered and are expected to be fully met by the end of the month.

Government Gets Full Output

Youngstown, O., Sept. 18.—Valley tin mills are operating at capacity with the entire output going to the government. It is questionable whether any prime tin plate could be purchased from the mills here unless the buyer is prepared to furnish an A priority. Most of the production is being shipped to the various meat-packing companies for container purposes.

Lettings Are Cut in Two

August Fabricated Contracts Total Only 102,000 Tons—Eastern Mills Are Working off Orders Rapidly

New York, Sept. 16.—According to the regular monthly report of the Bridge Builders and Structural society, 57 per cent of the entire capacity of the bridge and structural shops of the country were contracted for during August. This percentage is equivalent to 102,000 tons, and represents a falling off of 105,000 tons from the record-breaking total of the preceding month. The decline is perhaps best explained by developments in July, when formal orders for tonnages distributed previously came through to swell the figures for that month. The tonnage contracted for in August is more in line with those of the first six months of year, which averaged 56 per cent of the shops' total capacity. A comparative statement follows:

Month	Per cent	Approx. tonnage
August, 1918	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,030
February	59	106,030
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Lettings in the New York structural market during the past week were few. The remaining 8000 tons for the two government explosive plants being erected in Ohio by the Air Nitrates Co., New York City, still are pending.

Meeting Essential Needs

Pittsburgh, Sept. 17.—Fabricators of steel are so fully engaged on essential war work as to be unable to even entertain any other business. By devoting capacity entirely to this sort of work, the needs of the shipyards and other war activities are being met with no great trouble, although there is little to spare and it will take some time for the mills to get abreast of orders now booked. It recently was announced that the United States Steel Corp. ordnance department proposes to build a bridge across the Ohio river that will span Neville island, instead of two spans on either side of the island. An elevated railroad along the island is among other plans calling for fabricated steel. It is understood that the American Bridge Co. to date has been allocated about 120,000 tons of steel in connection with the Neville island gun plant.

Gaining on A Orders

Philadelphia, Sept. 17.—Structural shape mills still are occupied principally on Class A material, but are gaining on orders of this rating and unless additional ship contracts for fabricated material are let shortly may get to be orders before many days Jobbers to date have received practically no material under their B-4 rating except occasional cars of off beats or other material not meeting government specifications. At the same time, many government contracts specify material from stock and jobbers consequently have had to scour the country for supplies.

Building Ban Closer

Chicago, Sept. 17.—Enforcement of a new ruling that all building projects must be submitted through local councils of defense for recommendation before material can be ordered or transported is limting still more closely the sale of structural material. During the past week the only tonnage in the west is 304 tons taken by the American Bridge Co. for three small bridges for the Wabash railroad.

CONTRACTS AWARDED

Subway for New York, New Haven & Hartford at New Haven, Conn., 250 tons, to McClintic-Marshall.

One riveted truss span and two plate girder bridges for the Wabash railroad (U. S. Railroad Administration), 304 tons, to the American Bridge Co.

Government mechanical repair unit, San Antonio, Tex., 1600 tons, to the Kansas City Structural Steel Co.

Acid plant, Little Rock, Ark., 400 tons, to the Kansas City Structural Steel Co.

Miscellaneous work for Pennsylvania railroad, 400 tons.

Government work, Lake Denmark, N. J., 400 tons to Hay Foundry & Machine Co.

Canada Needs Priority

Buffalo, Sept. 16.—The government demand is increasing in all finished iron and steel lines. Shipping is being done on priorities in class A and in the high B classifications. Some mills are declining to entertain anything in class C. Jobbers' stocks are becoming more and more depleted and there are reports in circulation that these may be consolidated against the urgent government needs.

It is understood that the war industries board has definitely ruled that automatic priorities contained in circular No. 4 are not to apply on shipments into Canada. It will be necessary for the Canadian user to negotiate a priority through the aid of the Canadian war mission and the war industries board or have the American mill make application to the director of steel supply for permission to ship.

Some Advances

May Be Asked on Painted Barb Wire —No Nail Priority

New York, Sept. 16.—The subcommittee on wire products of the American Iron and Steel institute met here last week to consider principally prices of barb wire and wire nails. The barb wire situation presents some rather perplexing problems. Mills have enough business of this class on their books to keep them busy about eight months, for the United States and allied governments. In order to expedite deliveries, orders in many cases have been shifted from galvanized to painted barb wire. This class of product takes only a small differential over the wire nail base and it is thought in some quarters a higher price should be allowed. The normal output of barb wire is estimated at about 40,000 tons a month, but mills have stated their belief that they can increase production to 55,000 tons a month if necessary. An interesting sidelight on the barb wire situation is the recommendation by some authorities that as much galvanized wire be used as possible rather than painted wire, for war work, inasmuch as the end of the war will find large tonnages of barb wire in warehouses abroad and in transit which would soon deteriorate if not galvanized, and thus become unsuitable for commercial purposes. The enlargements planned in various cantonments are requiring additional allocations of wire nails. It is estimated about 35,000 kegs were distributed last week for cantonments at Des Moines, Rockford and other points.

Must Do Essential Work

Pittsburgh, Sept. 17.—Makers of wire and wire products in this district have recently had instructions from Washington that they must turn more and more to the production of that which is vitally essential to the war program. The specific instruc-

tions were that the wire mills must soon get to turning out 100 per cent shell steel or military barbed wire. The great bulk of current output is going on direct or indirect government work and with few mills running at better than 50 per cent of capacity and some running at 35 per cent or less, jobbers are not faring at all well in their replacements. Some makers are taking about 50 per cent of the business such orders call for, but others are able to do nothing with them. Pittsburgh makers have heard nothing of an allocation of 40,000 tons of plain wire, but it is reported that another big order for military barbed wire is soon to be distributed. Installation of equipment is not yet fully completed at the Donora plant of the American Steel Wire Co. and this works, which has not yet begun to produce shell steel for which purpose it was changed from wire production.

May Buy Nails Freely

Cleveland, Sept. 17.—Jobbers this week have reported to the makers the receipt of the advice from Washington to the effect that they are not obliged to report monthly, their distribution of wire nails. They, therefore, are privileged, they say, to buy all the nails they desire subject to what are available. This would mean that these orders would take a C classificatoin and not a B-4 for the replacement of stocks. The steel administration's position on nails apparently is based on the belief that there is an ample supply. This view has been manifested previously. The makers, however, do not concur this belief, as they state the drafts upon them for raw steel are cutting the nail output. Wire fence manufacturers are endeavoring to get themselves classified as essential to a certain percentage at least. At present they are not so included and are facing a serious probability of being obliged to discontinue. Shell steel discards are being used by some of the wire mills in rolling bale ties and certain other products.

Mill to Start

The Gerson Metal & Iron Co. is about to begin operations at its rolling mills in East Birmingham, Ala. A daily output of between 30 and 50 tons of bar iron is expected. It is understood that government business is in hand assuring steady operations. The plant was purchased some time ago from the W. C. Shackelford estate. It has been idle for years.

Sheet Mills Running Low

Diversion of Steel to Other Forms Reduces Output to 50 Per Cent—B Orders Neglected

Youngstown, O., Sept. 18.—On account of the scarcity of sheet bars brought about by steel being diverted into other channels, it is doubtful whether the sheet mills here will operate above 50 per cent this week. Most makers have good sized tonnages of sheets on their books for the government. It is not impossible for consumers with B priorities to obtain sheets now but the supply is getting tighter each week and their is every indication that before long an A priority will be the only means a buyer will have of getting shipments for any grade of sheets. Some mills are following this policy now and it will not be surprising if others would do the same. Most sheetmakers here are discouraging inquiries in view of government tonnages. These continue to come into the valley from time to time and are ample enough to keep the rolling schedules filled from one week to the next.

No Increase In Output

Pittsburgh, Sept. 17.—Sheet mill operations continue to run between 50 and 60 per cent of capacity, with the output no more than sufficient to meet the requirements that carry high priority ratings. The suggestion that with the curtailment in the allotment of sheet bars to the tinplate mills sufficient to permit the latter to run only at 70 per cent of capacity there would be a better supply of bars for the sheet mills finds no support here. The sheet mills are getting enough bars to meet direct and indirect government orders and those are all that count these days. To give the sheet mills the bars released through the curtailment of tinplate allotments would defeat the ends that were sought in ordering the cut in tin bar supplies, which was to allow the diversion of the steel to plate, rail and shell steel production. Jobbers are getting small tonnages of sheets on replacements here and there, but in general, such orders are merely being booked.

Output Grows Less

Chicago, Sept. 17.—Sheet mills and their output decreasing in proportion to the diversion of more steel to strictly war purposes. Need for plates, shell bars and car material, as well as for forging billets, has reduced the supply of steel for sheet bars. Even those sheet mills not dependent on other interests for their raw material find difficulty in supplying sufficient steel for their needs. Demand is difficult to gage as many buyers who desire supplies have ceased to seek tonnage after meeting many rebuffs. Warehouses are in hard lines, as their priority, B-4, puts them as far as six months behind on delivery and no present means presents itself for giving them better position.

Car Priority

Finally Settled and Requirements For France Receive Preference

Chicago, Sept. 17.—Conflicting claim of priority between the railroad administration freight cars and those ordered for use in France finally has been settled definitely. The domestic cars are classed as B-1, while the cars for military use in France have been given a classification of A-5. This places the French cars practically next to ship material and shell steel, while the domestic cars are a step further removed. As far as is known by mills here, material for the second lot of military cars for France, involving 20,000, has not been allocated.

Allocate Car Material

New York, Sept. 16.—Allocations now are being made of structurals, plates and axles for the 20,000 railroad cars for shipment to France. The tonnage involved is described as very heavy, but definite figures are not yet available. The rail situation is unchanged. Mills are booked well ahead, probably to the latter part of 1919.

Pressing for Deliveries

Pittsburgh, Sept. 17.—Makers of small spikes are being pressed for deliveries by customers and are extremely busy in the effort to meet this request. An allotment of 7000 kegs of standard spikes for the French government is up for allocation. Standing orders for standard spikes are large, but new business is not heavy. Light rails are wanted for coal mines. Announcement is expected shortly of some large standard rail tonnages, both for General Pershing and the needs of the national railroads.

Advances Asked on Pig Iron and Ore

Special Committees of Merchant Producers Petition War Industries Board for Relief For High-Cost Operators—Uniform Advance of $5 or District Differentials of $2 to $5 Suggested on Pig Iron

WASHINGTON, Sept. 18.—Substantial advances on both pig iron and iron ore will be asked when delegations of producers in these lines appear before the price fixing committee of the war industries board at the conference tomorrow at which iron and steel prices for the final quarter of the year will be settled. These committees will join forces in pushing their claims with the committee on steel and steel products of the American Iron and Steel institute which usually has represented all branches of the iron and steel industry at these conferences.

The special committee to speak for the merchant pig iron producers is composed of E. N. Rich, Alabama Co., representing the Alabama district, chairman; D. T. Croxton, of the Cleveland Furnace Co., the Central district; W. A. Barrows, of the Thomas Iron Co., the eastern district; John B. Newton, of the Virginia Iron, Coal & Coke Co., the Virginia district, and W. H. Lindsey, Napier Iron Works, the Tennessee district. The interests of the iron ore companies will be looked after by John A. Savage, of John A. Savage & Co.; W. G. Mather, of the Cleveland-Cliffs Iron Co.; T. W. Heed, Judson Mining Co.; A. A. Schlessinger, of the Newport Mining Co.; George A. St. Clair, of the Section 30 Mining Co., and O. B. Warren, of the Mace Iron Mining Co.

Pig iron especially is in the limelight at this conference owing to the vigorous claims for relief which are being made by that portion of the industry which declares it is unable to operate at a profit at present prices. This portion is estimated at 20 per cent. Based on the costs of these producers as determined by the federal trade commission, an alternative proposition will be made to the government either to allow a uniform general advance which will take care of the highest cost furnaces amounting to $5 per ton; or a varying advance graduated in accordance with the operating costs in different districts. These districts or group differentials would represent an advance of $5 for the Tennessee and Virginia furnaces; of $4 for the eastern district; of $3 for Alabama makers; and of $2 for the central district. These group advances would make the base for No. 2 foundry iron $38 furnace in Virginia and Tennessee; $37 furnace in the east; $36 furnace in Alabama and $35 furnace in the central district. In the event that the uniform advance is regarded as more in harmony with government policy, it is pointed out that the added advantages those makers already showing good profits at present prices would be neutralized by higher war taxes.

The high-cost producers will declare that the question is entirely one for the government to decide. If the latter deems that the maintenance of full production on the basis of present operations is imperative, it is emphasized it must make allowance for those furnaces which are running without profit or at a loss. Otherwise, it is stated by the furnacemen many of these plants will be obliged to go out of blast.

Iron Ore Problems

Delegates of independent iron ore producers are meeting representatives of the federal trade commission here today. Costs of producing iron ore of all grades, both in underground and open pit properties, are being considered. The meeting is preliminary to the general quarterly meeting with the war industries board on Thursday at which a committee of six independent ore producers will have an opportunity of outlining costs, receipts and profits or losses in the various districts.

Ore producers have taken more seriously to cost-keeping during the past few months. Figures now available on mining costs are generally prepared in accordance with the uniform classification of operating accounts drawn up and approved by the Lake Superior Iron Ore association. This method of dividing and apportioning costs has the semiofficial approval, at least, of the federal trade commission, many of whose auditors have inspected such records.

The need for standardization in iron ore mining cost-keeping methods has been apparent, more particularly since the producers began to find their costs steadily overhauling their receipts for their ore.

Ore miners face this quarterly meeting better equipped to know their own costs than ever before. Most of the independents have submitted their latest monthly cost records in standard form and in most cases these returns have been specifically audited by representatives of both the federal trade commission and the association. The federal trade commission and later the war industries board will have the first opportunity of studying these cost figures but it is believed that they back up substantially the estimated costs for third-quarter operation, presented by the ore men at the June meeting. Underground operations generally show practically no profit, whereas big open pit workings frequently show a large profit.

Since the last meeting when ore men won a 45-cent increase based on the June 25 freight rate advance, costs have grown. The freight rate provided for a 30-cent advance per net ton, or 33.6 cents per gross ton. Application of the fractional rule brings the actual advance for all ranges to an average of about 37 cents. Labor received a 10 per cent advance on Aug. 1, so that ore producers point out that the 45-cent advance of July 1 has been wiped out.

Iron ore producers feel that an advance of 15 to 20 per cent will be necessary during the next six to nine months to safeguard high-cost underground operators.

The ore committee of six is representative of the different ranges in the Lake Superior district. Mr. Mather represents Marquette; Mr. Heed, the Menominee; Mr. Schlessinger, the Gogebic; Mr. Savage, the Cuyuna; Mr. Warren, the Mesabi, and Mr. St. Clair, the Vermillion.

Steel Changes Not Expected

It is not expected that many requests for changes in the official base price on finished steel products will be made. If the price fixing committee allows an advance in steelmaking pig iron, however, it will operate to raise the cost of many steel works to that extent, and would upset the present structure of mill prices. A new fixed price which may be announced is that on standard rails which up to this time has remained unsettled.

British Institute

Holds Fall Meeting—Papers Read By Eminent Scientists

The fall meeting of the British Iron and Steel institute was held at the headquarters of the Institution of Civil Enginers, Great George street, London, on Thursday and Friday, Sept. 12 and 13. There were two sessions each day. The meeting was presided over by Eugene Schneider of the famous Schneider works in France. A number of new members were elected at the opening meeting on Sept. 12. The following papers were read and discussed:

"Principles of Open-Hearth Furnace Design," by C. H. F. Bagley; "The Rate of Change at 100 Degrees Cent. and at Ordinary Temperature in the Electrical Resistance of Hardened Steel," by E. D. Campbell; "Some Experiments on the Reaction between Pure Carbon Monoxide and Pure Electrolytic Iron Below the A-1 Inversion," by H. C. H. Carpenter and C. Coldron Smith; "Influences of Hot Working on the Qualities of Steel," by G. Charpy; "The Casting of Steel in Ingot and Other Molds," by J. E. Fletcher; "Notes on a Telescopic Focussing Apparatus for Photomicrography," by A. F. Hallimond; "Case-Hardening Practice," by D. Hanson and J. E. Hurst; "Use of Bosh Tuyeres in the Blowing of Basic Pig Iron," by J. S. Hollings; "On Magnetic Analysis as a Means of Studying the Structure of Iron Alloys," by K. Honda; "Prevention of Growth in Gray Cast Iron," by J. E. Hurst; "Standardization of Tests for Refractory Materials," by Cosmo Johns; "The Utilization of Waste Heat from Open-Hearth Furnaces for the Generation of Steam," by T. B. Mackenzie; "Influence of Elements on Tenacity of Basic Steel," by A. McWilliam; "Chemical Standards and their Bearing on the Unification of Analysis," by C. H. Ridsdale and N. D. Ridsdale; "Hardness Testing: Relation between Ball Hardness and Scleroscope Hardness," by A. F. Shore; "Phosphorus in Malleable Cast Iron," by J. H. Teng, and "Notes on the Warping of Steel Through Repeated Quenching," by J. H. Whiteley.

Minerals Measure Passed

Washington, Sept. 17.—To provide government stimulation of production and distribution of minerals needed in the war, a bill was recently passed by the senate with minor amendments and without a record vote. This measure is similar to one which has passed the house. By it, the President is authorized to take over and operate undeveloped or insufficiently developed deposits of certain metals or minerals and mines, furnaces or plants which in his opinion are capable of producing minerals required for war purposes. These minerals include manganese, phosphorus, potassium, radium, mercury and 36 other minerals and ores. Gold, silver, zinc, copper and lead are not affected. The bill carries an appropriation of $50,000,000 to carry out the purposes of the law and gives the President authority to create corporations.

More Pay is Demanded by Iron Workers in East

Inquiry into the report that bar iron mill workers, puddlers and finishers belonging to the Amalgamated Association of Iron, Steel & Tin Workers had made demands for a new sliding wage scale in all plants east of the Mississippi river revealed the fact that all operatives affiliated with the association east of the Alleghenies have demanded immediate readjustment of their sliding wage scale with threat of a strike. The war labor board is reported to have promised to give early attention to the demand. The operatives east of the Alleghenies claim they are paid a lower wage than operatives belonging to the same association working in western mills. It had been reported incorrectly that the sheet mill workers were the dissatisfied ones. At the bi-monthly meeting of the association's representatives and western sheet and tin plate manufacturers union men expressed no dissatisfaction with the present wage scale, although sales prices which were $5.15 on 26, 27 and 28-gage sheets for July and August, and $3 for tin plate per base box, are slightly under the high figures of a few months ago, thereby bringing about a slight reduction in their wages.

Steel Men Wanted

The metallurgical branch of the ordnance department, engineering division, under the direction Dr. George W. Sargent, is seeking a number of men for important metallurgical work. Men who have had steel mill experience, or its equivalent are desired. These men are needed at an early date. Suitable salaries will be paid. Requests for further information should be addressed to Lieut. Col. H. W. Reed, office of the chief of ordnance, engineering division, Washington, D. C.

Less Pig Iron

But Greater Total Valuation is First Half Record for Ontario

Toronto, Sept. 16.—Returns received by the Ontario bureau of mines for the six months ending June 30 give the production of pig iron as 341,182 tons, valued at $9,256,599, compared with 347,190 tons, valued at $6,067,050 for the corresponding period of 1917. There were 75,716 tons of Ontario ore and 601,751 tons of foreign ore smelted by the eight furnaces in blast. Steel produced amounted to 432,326 tons, valued at $13,739,602.

During the half year shipments of iron ore were made by the Algoma Steel Corp., from the Helen and Magpie mines and by Moose Mountain, Ltd., as heretofore. There also was a production of hematite by the Canadian Union Mines Corp, Ltd., from the Township of Drummond, 12 miles from Perth. This mine has been idle for about 35 years. Another iron mine in Palmerston township, eastern Ontario, known as the Ferguson, is now being operated by the Poe Mining Co. The Helen mine was shut down in April, all merchantable hematite having been mined out. Development work is proceeding on an adjacent property. Of a total of 106,196 tons of ore marketed 75,497 tons went to Ontario furnaces and the balance to the United States with the exception of a 42-ton shipment to Montreal. The total value of the output was $424,259, as against a production of 69,209 tons, valued at $231,937 during the corresponding period of last year.

The production of molybdenum concentrates was 32,656 pounds, valued at $45,845, as against 36,777 pounds, valued at $47,942, for the first half of 1917. Concentrators were operated by the mines branch, Ottawa, and by the Renfrew Molybdenum Mines, Ltd., at Mt. St. Patrick. The International Molybdenum Mines, Ltd., at Orillia and the Tivani Electric Steel Co. at Belleville marketed 19,410 pounds of ferromolybdenum valued at $59,153.

As a result of high mining costs, increased freight rates and smelter charges copper mining has become unprofitable. The only shipper was the Hudson Copper Co., at Havilan. There was an increase in nickel-copper mining and smelting. From the Creighton mines ore is being raised at the rate of over 100,000 tons per month. During the half year 804,640 tons of ore were raised from the nickel-copper mines. The tonnage of the ore smelted was 717,119, producing about 40,178 tons of nickel-copper matte.

Fall Meeting

Of Institute Is Omitted This Year Because of War Demands

New York, Sept. 18.—Owing to the enormous demands made upon the organization by the government for war purposes, the general meeting of the American Iron and Steel institute which usually is held in October, will be omitted for this year. This action was taken at the meeting of the board of directors of the institute held in this city Sept. 16. Last year the fall meeting was held in Cincinnati. The directors voted to increase the limit of membership from 1400 to 1500 active members and from 400 to 500 associated members. The following new members were elected:

Frank H. Colladay, The Trumbull Steel Co., Greenwich, Conn.

Robert I. Ingalls, The Ingalls Iron Works Co., Birmingham, Ala.

Walter Butler, Butler Brothers, St. Paul.

William Decou, jr., Richard DeCou Co., Philadelphia.

Emory Evans Smith, Smith, Emery & Co., San Francisco.

James H. Slawson, Joliet Railway Supply Co., Chicago.

Harrison S. Matthews, Iron & Railway Co., Dayton, Tenn.

Thomas R. Heyward, jr., Heyward Steel Co., Pittsburgh.

William H. Bischoff, Bethlehem Steel Co., Sydney, N. S.

Arthur Forbes Braid, electro-metallurgical engineer, Metal & Thermit Corp., New York City.

Charles D. Rawstorne, Freyn, Brassert & Co., Chicago.

Raymond A. Lackner, Neely Nut & Bolt Co., Pittsburgh.

Samuel Siddall, Warren Iron & Steel Co., Warren, O.

Edgar F. Price, electro-metallurgical engineer, Metal & Thermit Corp., New York City.

Edgar E. Jamison, Edgar Jamison Steel Co., San Francisco.

Edwin S. Church, Wellman-Seaver-Morgan Co., Cleveland.

Needs Below Estimates

Pittsburgh, Sept. 17.—The cotton crop having fallen below early estimates, the requirements of cotton ties are not so large as was anticipated and makers are not being pressed for deliveries. The mills will keep running pretty well through November on contracts and it is anticipated will have some surplus for sale during the quarter beginning Oct. 1. As yet little business of this period has been taken. The September price for cotton ties is $1.95 per bundle of 45 pounds.

Enameling Works Enlarged

The Enameling & Stamping Corp. of New York, Long Island City, has acquired the plant of the Fickling Enameling Corp., and has re-equipped it to handle a large volume of work. The company advises it is prepared to handle all forms of baked-on finishings or re-finishings. This does not apply to high temperature vitreous porcelain enamel, but to baked-on coatings of all kinds, up to 400-600 degrees, including transparent rust-proofing, acid-proofing, etc. The company does not make any products of its own, but devotes itself entirely to finishing or re-finishing of articles made by other manufacturers. W. J. Fickling is president, and H. F. Holbrook, secretary and treasurer.

To Heat Treat Tubes

The American Metallurgical Corp., Franklin Trust building, Philadelphia, has been awarded a contract by the aircraft division for the installation of special electric heat treatment equipment in the plant of the Ohio Seamless Tube Co., Shelby, O. Airplane tubes will be heat treated and it is hoped that the efficiency of the tubes will be increased by this treatment to such an extent that a large amount of weight will be saved in the construction of the planes and allowing also for the general increase of efficiency throughout. The heating units to be installed are to be supplied by the General Electric Co., Schenectady, N. Y.

New York, Sept. 18.—Blast furnace operations of the Steel corporation last week dropped off slightly. They amounted to 92.8 per cent of capacity, a decrease of 0.2 per cent. Steel ingot production was unchanged at 96.4 per cent of capacity.

The Non-Ferrous Metals

Copper **Lead** **Spelter** **Tin**

	*Copper	†Spot Straits Tin	‡Lead, New York basis	Spelter St. Louis basis	§Aluminum	Spot antimony
Sept. 11	26.00	.....	8.05	9.30	33.00	13.75
Sept. 12	26.00	.....	8.05	9.35	33.00	13.87½
Sept. 13	26.00	.....	8.05	9.40	33.00	14.00
Sept. 16	26.00	.....	8.05	9.50	33.00	14.00
Sept. 17	26.00	.....	8.05	9.50	33.00	14.00

*Government fixed maximum price for prime lake, electrolytic and casting copper, in ingots, pigs, slabs, etc., less than carloads, 27.30c.

†No spot Straits tin offering.

‡Price agreed to by leading interest and independents.

§Government fixed price for 98 to 99 per cent ingot aluminum in 50-ton lots; lots 15 to 50 tons, 33.10c; one to 15 tons, 33.20c.

NEW YORK, Sept. 17.—It was announced by the war industries board last week that the interallied tin committee in session at London had assumed regulation of world tin distribution and prices. Two-thirds of the world's tin output will be allotted American consumers, all tin coming to this country being consigned to the American Iron and Steel institute, which will distribute the metal among essential users at a fixed price. The tin trade remains in the dark as to what measures may have been adopted to control Banca tin, which is produced in a Dutch colony, as well as Chinese tin, which has hitherto been sold freely. Near the close of last week, the usual "Singapore" price, which has been a feature of the daily cable from London to the New York metal exchange, was not forthcoming, indicating another step toward the fixing of a price for Straits tin in the primary market. Spot tin in this country is quoted nominally 78c.

The war industries board last week wired an inquiry for 6000 tons of prime western spelter, bids to be in the following day at noon, the metal being desired for delivery over October, November and December. This quick action prevented the usual stiffening of prices and the consequent increases the government would have had to pay. As it happens, the market is discounting the withdrawal of this metal, prices having strengthened steadily, the advance in the past week amounting to more than ¼c a pound. High grade spelter prices are being well maintained at the government maximum of 12c, St. Louis.

The lead situation remains extremely tight, with the lead producers committee exercising full control over the situation. Consumers of carload lots must put their requirements up to the committee, which will judge as to the degree of their necessity. Less than carloads still may be sold by dealers at a margin fixed by the committee, over and above wholesale prices. The wholesale price is 8.05c, New York, 7.75c, St. Louis, while on ton lots or less the dealer may charge ¼c extra, and on less than carloads but more than ton lots, an extra of ½c may be charged.

The antimony situation is unchanged, although the increasing amounts of shrapnel called for under the war progam give rise to expectations of larger consumption of the metal. Prices for Japanese and Chinese brands are about 14c, duty paid, New York.

The aluminum market shows no developments, prices and distribution being regulated by the government. The fixed price of 33c for virgin ingot 98 to 99 per cent will be effective until next March.

The copper market continues to run along smoothly, the machinery of distribution by the copper producers' committee operating with general satisfaction. No complaint is heard as to scarcity of copper, but there are no reports of shading of the fixed price of 26c.

Making Dummy Shells for Army

A Two-Part Flask is Used and Most of the Mold is in the Cope—Specifications Are as Strict as for Heavy Artillery Shells—Nose Shrinkage Eliminated

BY H. COLE ESTEP

A FEW MONTHS ago many gray-iron foundrymen were of the opinion that their direct participation in the support of our armies in the field would be negligible. This belief was the result of a lack of knowledge of the conditions of modern warfare, and as our military plans assumed shape it became evident that iron foundrymen would be called upon to play as important a role as their colleagues in the steel-casting business. First came large orders for hand and rifle grenades. These were followed by contracts for trench-mortar bombs and orders for large semisteel shells.

More recently gray-iron foundrymen have found it necessary to turn their energies in still another direction. The rapid expansion of our armies, coupled with the establishment of huge training camps, has created a demand for a large number of dummy shells to be used for instruction purposes. They figure prominently in the primary exercises of embryo artillerymen, and convey to the tender muscles of the drafted soldier the first taste of war's stern realities. In every detail these shells are replicas of the real thing. They are made of gray iron and are cast in green-sand molds with dry-sand cores. Thousands of them have been ordered.

The Globe Stove & Range Co., Kokomo, Ind., is casting 8100 dummy shells of the 6-inch size. They weigh 50 pounds each. Don't imagine that because they are used simply for practice they can be made in a go-as-you-please fashion. The specifications are virtually as strict as for the heavy 6-inch rifled, semisteel field artillery shells. The practice shells must be accurate in size and weight; the finish must be flawless; the balance, or hang, as the artillerymen call it, must be correct; the core must be properly centered, and the composition of the metal must accord with the specifications. Throughout the manufacturing process continuous care and constant inspection is required. To obtain a uniform product and an output commensurate with conditions of the contract, the Globe Stove & Range Co. uses molding machines extensively on its dummy-shell floors. A two-part cast-iron flask of special shape is employed. Practically all of the mold is in the cope, which is made on a 24x10-inch, hand-operated, turn-over draw machine furnished by the International Molding Machine Co., Chicago. An iron pattern is fitted on the machine. The drag is molded on a bench using a simple metal roll-over board. Four men turn out 80 to 100 molds a day, with losses averaging only 2 per cent. The gang consists of one molder and three helpers. The molder and one helper work the machine; the third man makes the drags and the fourth sets cores and assists in closing the flasks. As previously indicated, the molds are made in green sand with a dry-sand center core. The latter must be carefully formed and accurately set and centered by means of gages. Also it is necessary to provide means for steadying the upper end of the core so it will not be shifted to an eccentric position while pouring.

FIG. 1—THE COPE IS MOLDED ON A TURN-OVER DRAW MACHINE USING A METAL PATTERN

The metal must have the correct composition, or trouble will be experienced with shrinkage, particularly at the nose of the shell. Also it must be poured properly and at the right temperature. Above all it is essential that it be clean and free from slag. To this end, a specially designed skim-gate provided with two skimmers and a whirling basin to catch slag has been provided. This arrangement, together with the other details of the job, was worked out by George B. Jones, general superintendent of the Globe Stove & Range Co. The cope is formed in the shape of a truncated cone, 15½ inches high, with an inside diameter of 12 inches at the top and 11 inches at the bottom. A lip in which the pouring runner is carried is formed on one side of the cope. It measures 5½ inches across. In addition, the cope is fitted with ears to engage the flask pins on the drag. Lugs also are cast on the side of the cope for convenience in handling. Fig. 1 shows the cope on the machine just after the pattern has been drawn. The general arrangement of the mold and the position of the pouring lip and runner are clearly shown. Fig. 4 is another view of the molding machine, showing the pattern ready to receive the cope which may be seen standing on the floor in the foreground. It will be noted that the cope is designed to reduce the consumption of sand to a minimum. A floor of completed molds is shown in Fig. 6. This represents half a day's work by one mold-

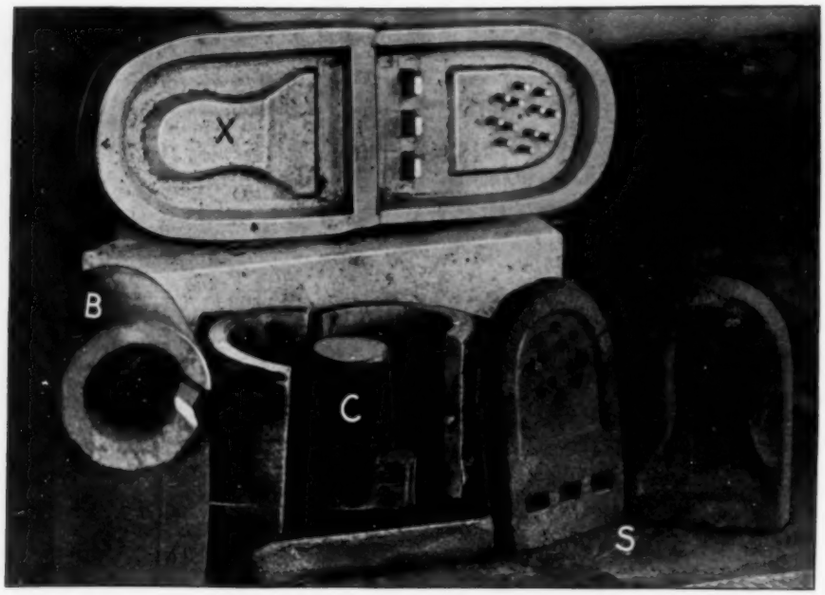


FIG. 2—DETAILS OF DRY-SAND SLAG BASIN AND SKIM-GATE PARTS WITH COREBOXES

ing machine gang. The drag flask, which is also cast iron, is clearly illustrated in Fig. 5. It is 11 inches in diameter and 3 inches deep. It acts primarily as a base for the mold and contains the skim-gate and main core-print. It is rammed-up by hand on the plate shown in the foreground in Fig. 5. One man makes all the drags for a floor. The drags are set on wooden bottom-boards.

The Skim-Gate

The details of the skim-gate are shown in Figs. 2, 4 and 5. The runner extends clear through the cope, the metal entering the mold from the bottom. The gate consists of the slag basin *B* Figs. 1, 2 and 4, and the dry-sand skimmer *S*, Fig. 2. The latter is shown in position in the drag in Fig. 5. The slag basin is also dry sand. The corebox in which it is made is shown at *C*, Fig. 2, the corebox for the skimmer being shown at *X* in the same illustration.

When the mold is made, the slag basin is rammed-up with the cope, being placed on the pattern-plate on the machine alongside the print for the runner. Its position is illustrated at *B* Fig. 4. As shown in Fig. 2, this basin is nothing more than a dry-sand cup 3 inches high and 2½ inches in diameter outside, with corresponding inside dimensions of 2⅝x1¾ inches. The lip of the basin, or what would be the rim of the cup, is notched as shown in Fig. 2. This notch is ⅞-inch high and ½-inch wide. It is set eccentrically and at such an angle that the metal entering the cup through the notch is given a whirling motion. The whirling basin is so placed in the cope mold that the entrance notch is opposite the lower end of the iron runner. The relative positions of the basin and runner are shown in Figs. 1 and 4.

The skim-gate proper is formed by two dry-sand slabs, one of which is blank while the other is perforated. The blank slab, shown at the right in Fig. 2 is set low in the drag and forms the base of the gate or metal channel. The perforated slab lies over it like a cover. These slabs are 3⅛ inches wide, 5 inches long and ½-inch thick. The perforated one has twelve ⅛-inch holes in the circular end and three rectangular holes, ⅛x½-inch, in the square end. When the gate is in use the metal enters through the former and exits through the latter holes. The position of the skim-gate in the drag is clearly shown at *S* Fig. 5.

When the mold is closed, the whirling basin in the cope shuts down over the twelve ⅛-inch holes in the skim-gate. The iron coming down the runner first enters the whirling basin through the notch previously prescribed and then plunges into the skim-gate through the ⅛-inch holes. While in the whirling basin it is given a circular motion and its velocity is temporarily arrested. This gives any particles of slag that may have come down the runner with the iron an opportunity to rise and separate from the metal. The small holes in the skim-gate facilitate this action. After entering the skim-gate the iron passes through it, where it is subjected to further skimming action, and finally escapes into the mold through the rectangular ⅛x½-inch holes previously described. By the time the metal enters the mold it is thoroughly cleaned and free from impurities, producing a sound casting.

The main central core is made on a bench in a metal corebox and dried in an iron dryer as shown in Fig. 3. This corebox is of the booking type. The core sand is mixed as follows: Four parts new Michigan City silica sand; four parts old molding sand, and eight parts yellow sand. In mixing, three quarts of glutrin and three quarts of oil are added to 24 shovelfuls of sand. The core is 15½ inches long over all and 4¼ inches in diameter at the largest section.

How the Main Core is Set

The main core is set in a large print in the drag as shown in Fig. 5. To test its concentricity, the gage shown at the right in this illustration is employed. The core must be absolutely on center. Furthermore, it must be prevented from shifting during pouring. To accomplish this, the small steady-core shown at *R* Fig. 5 is employed. This core slips over the upper end of the main core. It has a broad conical surface which is tucked in the sand in the top of the cope after the latter is closed over the drag. The upper end of the main core is thus firmly held in position. At the same time, the steady-

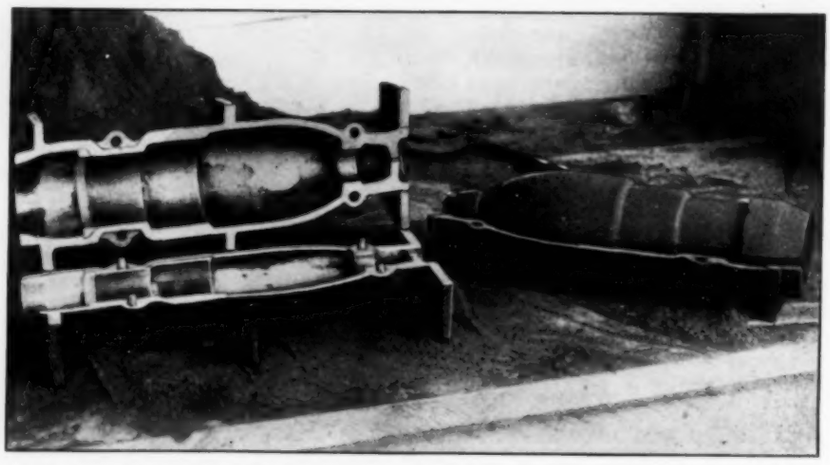


FIG. 3—THE MAIN CORE IS MADE IN A COREBOX OF THE BOOKING TYPE AND DRIED IN A CAST IRON DRYER

FIG. 4—A REAR VIEW OF THE MOLDING MACHINE SHOWING PATTERN READY TO RECEIVE COPE, WITH SLAG BASIN IN PLACE ON PATTERN PLATE

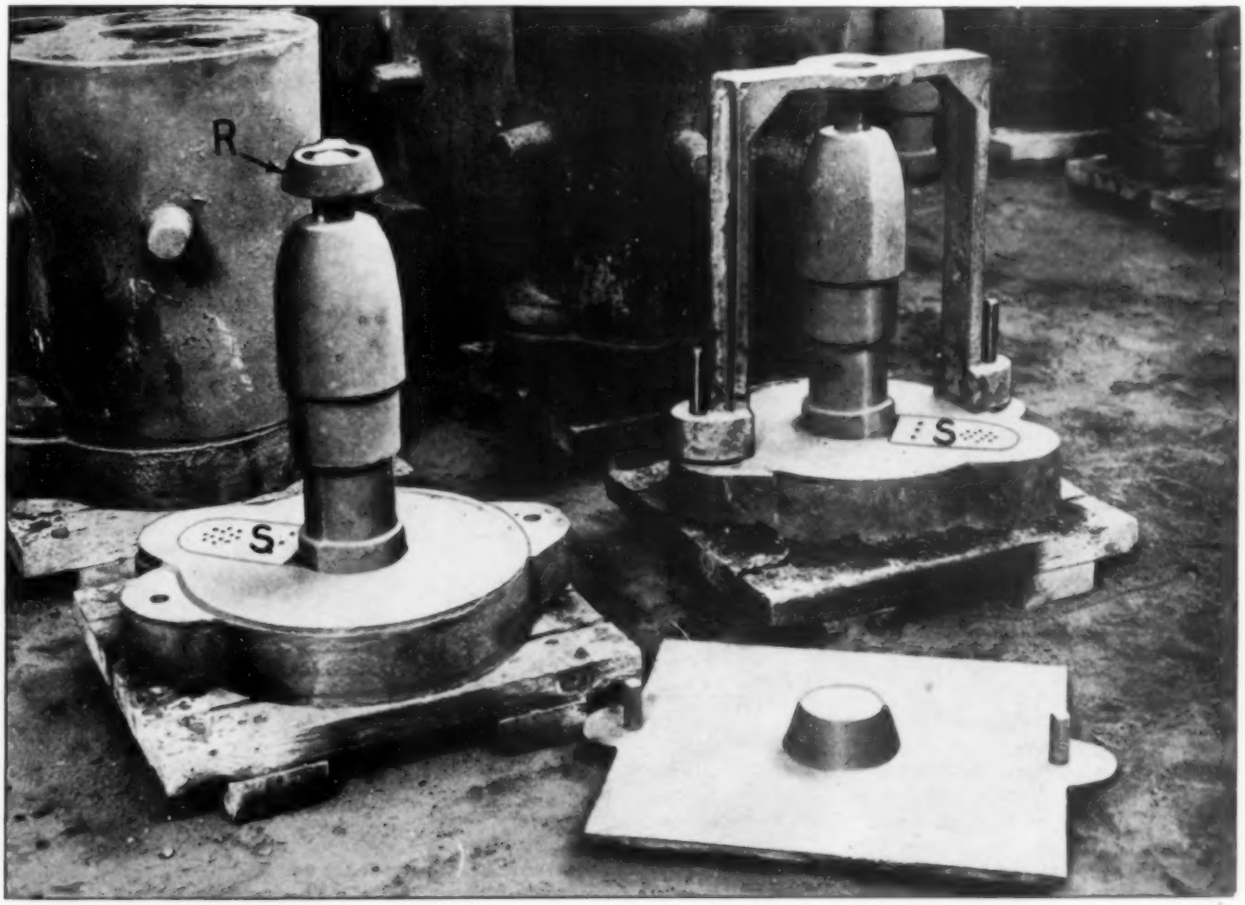


FIG. 5—THE MAIN CORES ARE TESTED FOR CONCENTRICITY BY THE GAGE SHOWN AT THE RIGHT. THE STEADY-CORE *R* HOLDS THE NOSE OF THE MAIN CORE IN POSITION

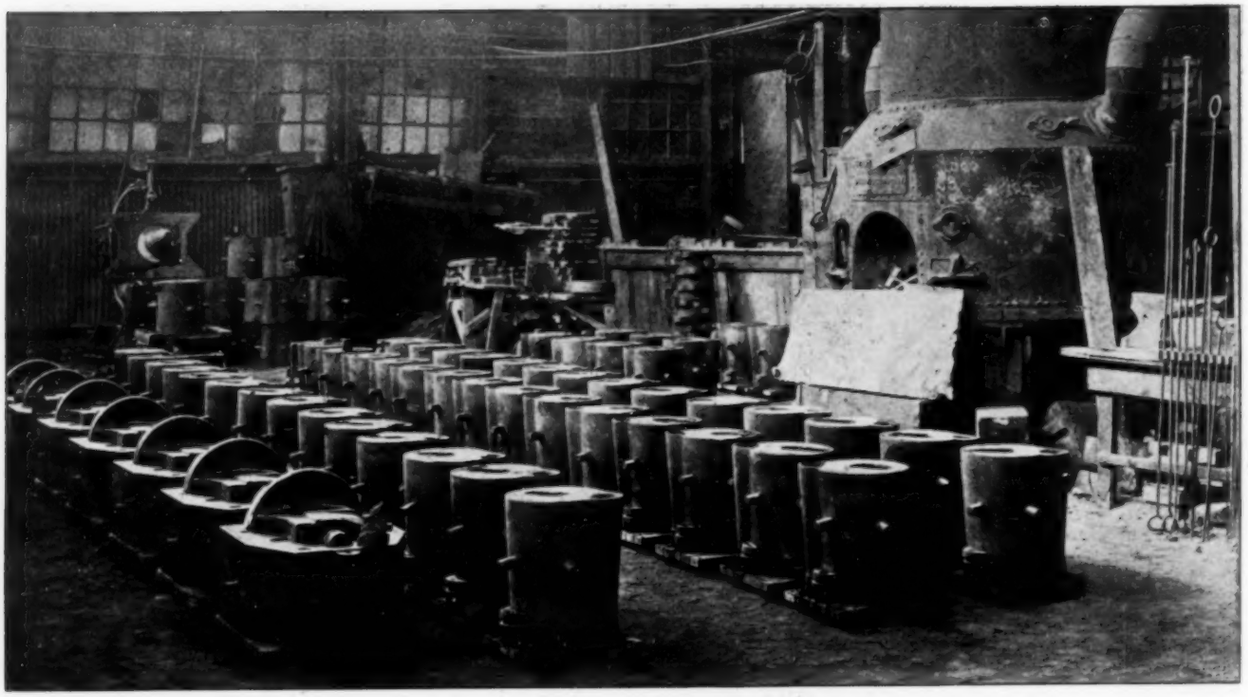


FIG. 6—HALF A DAY'S WORK. A FLOOR OF DUMMY-SHELL MOLDS WITH MOLDING MACHINE IN BACKGROUND

core forms a riser from the mold, being provided with two openings for this purpose.

The shells are poured with ordinary gray iron which is brought to the mold in a white hot condition. This iron contains from 2.40 to 2.45 per cent silicon and is a good stove-plate quality. At first some trouble was experienced from shrinkage at the nose of the shell. This has been eliminated by the use of the skim-gate previously described and by proper pouring practice. The mold is first poured until the metal shows flush with the top. Then follows a pause during which the metal is allowed to bubble and free itself from gas. Finally the pouring is resumed and continued until the small basin over the riser is brimming full. This practice is useful and insures sound castings.

Structural Causes of Rail Fissures

IN discussing a paper by J. E. Howard contributed to the American Institute of Mining Engineers, C. W. Gennet Jr., engineer with the Robert W. Hunt & Co., Chicago, directs attention to some fundamental structural causes of rail fissures. He states that the number of accidents actually resulting from rails containing fissures is no doubt a small proportion of the total, but serious losses have been directly attributable to fissures. This coupled with the continual possibility of repetition, creates a situation which demands a full investigation of the cause of fissures, apart from other types of rail failures. It is generally conceded that fissures, whether fundamentally due to fatigue or other cause, are of a progressive character, their ultimate size being the result of growth from an originating nucleus or point of rupture. Proof of this lies in the variable sizes of the fissures found, and there can be no doubt that the development or growth is the result of the strains to which rails are subjected in the track. Therefore, the most important factor in investigating the cause for fissures lies in determining the conditions that exist at the point or nucleus of original rupture. The composition of the steel chemically and structurally in this small area thus becomes of vital interest, and it is not enough to depend entirely upon the manifestation of good conditions elsewhere in the sample under investigation.

Analyses of Rails

Rail	Carbon	Manganese	Phosphorus	Sulphur	Silicon
A	0.843	1.20	0.042	0.032	.....
B	0.860	0.67	0.050	0.033	0.016
C	0.690	0.79	0.095	0.025	0.005
D	0.830	0.79	0.062	0.041	0.165
E	0.840	0.79	0.059	0.040	0.152
F	0.801	0.91	0.015	0.041	0.125
G	0.710	0.77	0.121	0.030	0.003

The inferior conditions that may be present are manifold and minute, and examination of them requires careful and skilful work by trained metallurgists. The absence of results of critical examinations of various specimens in many of Mr. Howard's government reports is disappointing and does not add conviction to the statement that "Critical examinations have shown transverse fissures to have their origin in metal miscroscopically sound and normal in structure." In fact, the results of some chemical analyses of steel containing transverse fissures are such as to direct prompt suspicion to the quality and consequent structure of the steel. The question is whether Mr. Howard's studies have been conducted far enough along certain metallurgical lines to justify, beyond argument, his statements which plainly relieve the chemical and physical condition of the steel from any responsibility for the origin of fissures.

Several reports have been issued by the interstate commerce commission giving the results in connection with accidents caused by transverse fissures. The accompanying table gives the various chemical analyses made on rails containing fissures mentioned in the interstate commerce commission's reports.

None of these rails, possibly excepting *F*, is acceptable under the chemical requirements laid down by recognized specifications for rail steel. The "slender deficiency" by which most of these steels fail to fulfill common rail specifications is not apparent, and although "it is not always clear that the most suitable steel for the purpose is asked for in rail specifications" still the burden of opinion is against the advisability of using steel of the hardness and brittleness indicated by the analyses.

Influence of Impurities

Aside from being chemically defective for use in rails, the steels analyzed offer other significant features for consideration. High carbon coupled with high phosphorus makes a hard non-ductile steel to start with, but the effect that large amounts of these elements, singly or together, may have in small local areas deserves study. Further, the low silicon in some of the steels above mentioned indicates the liberal use of aluminum at the time the steel was cast into ingots. Large amounts of aluminum added to steel, especially in the molds, has often been regarded as doubtful practice, while the resulting presence of alumina in soft steel has been identified and the good qualities of the steel questioned. Recently alumina has been found microscopically in rail steel, and incidentally in rails containing transverse fissures.

Basic open-hearth steel, such as is used for rails, is easily subject to the many vicissitudes of heat treatment. In fact, rails are virtually heat treated by the action they undergo when cooling on the hot beds. The influence there of cold winds and contact with the cold skid rails may be marked. Some effects of unusual heat treatment may be confined to short lengths of rail, and it is almost inconceivable that austenite or cementite does not exist locally in many cases. The presence of distinctly nonductile localities or regions is plainly predicated. All rails containing these hard spots caused by either chemical or physical conditions are subjected to the damaging blows of the straightening presses long before they reach the track and apparently opportunity is thus offered for interior injury to occur.

Fissures Not Fatigue Fractures

Thus it seems inconsistent to attribute the cause of fissures to simple fatigue fracture for which wheel loads are mostly responsible. The suggestion is advanced that as microscopic work proceeds the effects of sonims, nonductile spots, and the use of steel chemically unsuited for rails may be more fully established. The situation emphatically warrants a suspension of judgment until painstaking studies can be made.

It seems regrettable that with a subject so important as that of transverse fissures no effort has been made to accumulate the significant historical data pertaining to the various cases. Obviously this is a work for the Railway Engineering association, whose engineer of tests should have a complete index of the different cases, with such information on each as would make it unnecessary to deal with generalities, as is now often the case. Such cataloging of the fissures that have occurred should show among other things:

The name of manufacturer and railroad; dates of rolling, and occurrence of fissure; heat number and chemical analyses; location of rail in the ingot (and, if possible, the ingot in the heat); location of the fissure in the rail with respect to the branded side of the rail; location of the fissure in the rail with respect to the track-gage side of the rail; and location of the rail on high or low side of a curve or on straight track.

With the results of such a tabulation covering a large number of cases, the study of certain matters concerning fissures could be approached much better than at present, when comparatively few cases must be considered.

Steel For Allied Aircraft

Joint Anglo-American Specifications Are Being Perfected—Inspectors Will be Confined to Definite Limits

THERE has lately reached this country a small edition of a revised pamphlet entitled: "British Specifications for Aircraft Steels for Government Purchases in the United States." Confidential copies have been distributed among interested parties in the United States. But until any revisions proposed by the latter are approved in London and official agreement is thus obtained with the American interests with whom the British government can place orders for aircraft steels, neither the pamphlet nor extracts therefrom can be made public.

Contents Recently Discussed

However, a general idea of the contents of this document is to be had from a report made by Albert Ladd Colby to the American Society for Testing Materials at its recent meeting in Atlantic City. Mr. Colby represented that society at the Anglo-American aircraft standards conference held in London in February and March, of this year. He served as chairman of the committee that had in charge the revision and amplification of general specifications for steel and also was a member of the subcommittee that continued more intensely the work of the larger committee. Mr. Colby, therefore speaks with some authority about this pamphlet and what it has to say about specifications.

The steel specifications, Mr. Colby says, are limited to some extent. In the first place, they are intended to include the technical provisions necessary for the supply of the steels therein referred to, but do not purport to include all the necessary provisions of the contract. In the second place, they cover the requirements for wrought steels for aircraft in the form of bars, billets, sheets, forgings and drop forgings, but do not include tubes, wire, cables or steels for their manufacture.

The general specification No. AL 1, deals in definite and well-considered terms with all the necessary details of the manufacture of steel, its heat treatment and the procedure of testing, inspection and shipment, with definitions of the technical terms used and detailed drawings of the standard test pieces.

A point constantly borne in mind by the committee which had in charge the revision of the general specification was the necessity of including explicit and definite instructions in order to prevent the inspector representing the purchasing government from making inaccurate, unjust or arbitrary decisions, which, as is well known, result in the rejection of much steel entirely suitable for the purpose intended. It is the opinion of those familiar with the specification that its very definiteness will have the desired effect in preventing indiscriminate rejections.

Certain Specifications Condensed

Specification AL No. 2 consists of tables of tolerances. Specifications Nos. 3 to 24, inclusive, are individual specifications, which have been largely condensed to four clauses. Clause 1 states that the clauses of general specification AL No. 1 that are applicable shall form a part of this specification; clause 2 gives the range in chemical composition; clause 3 the heat treatment with the recommended temperatures, and clause 4, on mechanical tests, gives the required physical properties, which, taking the individual specifications as a whole, include the tensile breaking strength, yield point, elongation, reduction of area, cold bend test, Brinell hardness number and notched bar or so-called impact test. Three tabular statements make up the appendix to the

pamphlet, which consists in all of 57 pages.

This series of specifications has been tentatively named the "AL" specifications in anticipation of their possible future adoption by the Allies. For if the revisions soon to be sent to London for consideration are acceptable to the three committees of the British association, also satisfying the American aircraft steel interests, it has been guaranteed that the British Aircraft Steel Manufacturers' association will officially agree to furnish steels under these specifications on any orders which may be placed by the American government for British-made steels. After thus becoming Anglo-American standards, it is the opinion in England that the French and Italian governments will accept them as a basis for their future purchases of aircraft steels in England and the United States.

The adoption of the specifications by each government as a basis for its purchases of aircraft steels in outside countries does not contemplate, and probably will not result in, substituting these specifications for the existing ones of each government which at present apply to domestic purchases. But authorities both in this country and in England believe that the new specifications will result in the more uniform use of the same steels for certain airplane parts, the practical advantage of which in speeding up production is obvious.

Adopts Air Compressor Nomenclature

Upon the recommendation of its technical committee the Compressed Air society, 30 Church street, New York, has adopted the following definitions of certain compressed air terms in order to eliminate confusion as to their exact meaning:

Displacement.—The displacement of an air compressor is the volume displaced by the net area of the compressor piston.

Capacity.—The capacity should be expressed in cubic feet per minute and is the actual amount of air compressed and delivered, expressed in free air at intake temperature and at the pressure of dry air at the suction.

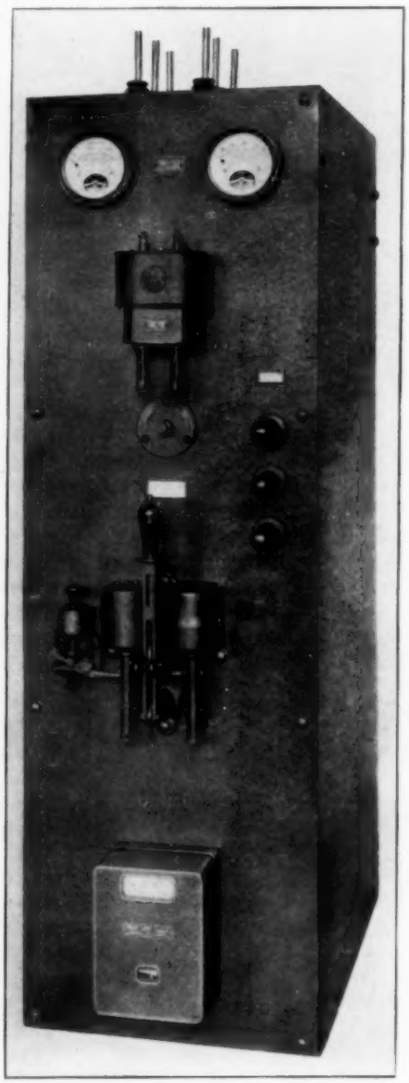
Volumetric Efficiency.—Volumetric efficiency is the ratio of the capacity to the displacement of the compressor, all as defined above.

Compression Efficiency.—Compression efficiency is the ratio of the work required to compress isothermally all the air delivered by an air compressor to the work actually done within the compressor cylinder as shown by indicator cards, and may be expressed as the product of the volumetric efficiency (the intake pressure and the hyperbolic logarithm of the ratio of compression), all divided by the indicated mean effective pressure within the air cylinder or cylinders.

Mechanical Efficiency.—Mechanical efficiency is the ratio of the air indicated horsepower to the steam indicated horsepower in the case of a power-driven machine.

Overall Efficiency.—Overall efficiency is the product of the compression efficiency and the mechanical efficiency.

The society further recommends that the use of other expressions of efficiency be discontinued.



SAFETY FIRST SWITCHING CABINET

Steel Switching Cabinet

The steel switching cabinet shown in the accompanying illustration is a unit made for single, quarter and three-phase circuits in capacities up to 300 amperes at 15,000 volts, and 800 amperes at 600 volts. All current-carrying parts are enclosed, and provision is made for bringing the leads out at top, bottom or sides of the unit. The cabinet consists primarily of instrument transformers, oil circuit breakers and disconnecting switches enclosed in a sheet steel compartment with instruments, operating levers, etc., mounted on the sheet steel front.

The main switching apparatus consists of a standard switchboard type oil circuit breaker operated in the ordinary manner. The oil circuit breaker is mechanically interlocked with the disconnecting switch so that this switch cannot be opened or closed while the oil circuit breaker is closed. The disconnecting switch is operated by means of a special handle or wrench from the front of the panel, and is so interlocked that the rear door cannot be opened while the switch is closed, nor can the switch be closed while the door is open. This makes it impossible for anyone to gain admittance to the compartment while the current-carrying parts are alive.

The cabinet has been designed for use as distribution and tying-in switches, as control switches for induction and synchronous motors, etc. It is usually mounted as a single unit but may be installed in groups if desired. When made with a drip roof the switching cabinet is particularly adapted to use in mines or other damp places. It can be made nearly water, gas and dust proof. It can also be used to control large motors in steel and cement mills, pumping plants, etc., where conditions often exist which cause the switching apparatus to become damaged and put out of service by dust, moisture and chains from traveling cranes. The cabinet is made by the General Electric Co., Schenectady, N. Y.

New Britain Workstand

The all-steel work stand described and illustrated on page 495 of the Aug. 29 issue of THE IRON TRADE REVIEW is manufactured by the New Britain Machine Co., New Britain, Conn., and not by the Meilink Mfg. Co., Toledo, O., as stated.

A national salvage council for Great Britain has been formed to assist local authorities in the collection, recovery and reutilization of waste products with a view to conserving national resources and reducing the tonnage required for the importation of raw material. One of the earliest conferences of the council in Birmingham recently resulted in a certain amount of stimulus to the collection of scrap and waste.

Advantages of Fuel Oil Over Coal

Reliable Tests Show Higher Boiler Efficiencies With Liquid Fuel—Maintenance Charges Decidedly Lower and Less Labor Required—Suggestions as to Correct Type of Burners and Methods of Safe Lighting

AT the end of 1914, the total aggregate world output of oil since 1857 had reached the enormous total of about 5,500,000,000 barrels (of about 42 United States gallons each) of which the United States produced about 60 per cent. By the end of 1916 this had risen to 6,478,944,929 barrels. In 1916, it is estimated there were produced 460,639,407 barrels, of which the United States produced 300,767,158 barrels, or 65 per cent. The data shown in accompanying table are from the preliminary report of the U. S. geological survey and show that in the year 1917 the production in the United States had increased some 14 per cent over 1916, reaching the record-breaking total of nearly 342,000,000 barrels.

Field	Barrels 1916	Barrels 1917
Appalachian	23,009,445	24,600,000
Lima-Indiana	3,905,003	3,500,000
Illinois	17,714,235	15,900,000
Oklahoma-Kansas	115,809,792	147,000,000
Cent. & No. Texas	9,303,005	11,000,000
North Louisiana	11,821,642	8,700,000
Gulf coast	21,768,096	24,900,000
Rocky Mountain	6,476,289	9,200,000
California	90,951,936	97,000,000
Other fields	7,705	.....
Total	300,767,158	341,800,000

At least 40 per cent of all the crude oil produced is available for fuel purposes. Notwithstanding the great amount required for war purposes, particularly in the navy and the rapidly increasing merchant marine, it is well worth asking whether or not oil fuel can be obtained for steam production on shore. No definite statement can be made as to the availability of oil in any particular locality, especially under the existing conditions. At all times, in fact, this is purely a local question. In California, until recently our largest oil-producing state, and where no coal of importance is mined, oil will doubtless continue to displace coal.

In Pennsylvania, on the other hand, there are great coal deposits while the oil produced is of a variety exceedingly valuable for refining, so that coal as a fuel holds decided superiority over oil except for special uses. In other portions of the country the balance may fall either way—as the production and the demand vary and as the transportation problem may determine. It would seem as if the Middle West should be well supplied with oil as Oklahoma now produces more than one-fifth of all the oil in the world. Oklahoma wrested the production laurels from California in 1915.

The Mexican production, while already large (nearly 40,000,000 barrels in 1916) has been restricted on account of a deficient amount of tonnage to take the oil away. With adequate shipping facilities it is probable that the Mexican fields will constitute the land and the Atlantic states. There is natural oil-fuel supply for New England and the Atlantic states. There is one well alone in Mexico, the *Cerro Azul*, estimated to have flowed 263,000 barrels a day and it is interesting to speculate on what these fields may finally produce. All indications point to the probability that there are enormous quantities of oil yet hidden in the earth's crust to be one day brought forth by the prospector.

A coal fire in the hands of a lazy or incompetent fireman may indeed fall far below the desired standards of excellence; but it can only reach a certain minimum level of efficiency, and then it will go out. Coal is, in fact, of such a nature that it will quietly stand a certain definite loss in economic results, and then it will quit.

With oil there is no limit to the possible wastefulness that may exist. Give it poor burners, improper furnace conditions or not enough draft, and it will smoke and sputter and drip oil and waste itself away, but never give up. Give it too much air, a hundred times too much and the fire will burn, the oil will disappear, the flame will be bright, there will be no smoke; but the waste may be so great that the boiler will not make enough steam to run the feed pump, even with the best furnace and burner arrangement.

It is approximately true that one pound of oil equals 1½ pounds of coal in actual steam-making results. Roughly, this is equivalent to saying that 200 U. S. gallons of oil equal one ton (2240 pounds) of coal, or one ton of coal equals about four and a half barrels of oil.

A handy rule, but like the rest only approximately correct, is this:

When the price of coal in dollars per ton (2240 pounds) is double the price of oil in cents per U. S. gallon, the cost of fuel for producing a certain boiler capacity will be the same for both fuels. Thus two-cent oil equals $4 coal, or four-cent oil equals $8 coal.

This rule takes into consideration the probable increased boiler efficiency obtainable with oil, but makes certain assumptions concerning the heat values of the two fuels and the weight of the oil per gallon which, while generally representative, may or may not be correct in any specific instance. Generally speaking, one oil burner will be required for, say, 350 to 400 boiler horsepower, and one oil

Oil Unevenly Divided

FUEL oil has many advantages over coal as a generator of steam. Reliable tests have disclosed boiler efficiency to be the greater with oil as the fuel; there is a decided saving of labor in the boiler room as a result of the use of oil and according to Ernest H. Peabody, the maintenance charges are decidedly less with oil than with coal. In the 60 years ending with 1916 the world produced almost six and one-half billion barrels of oil, the greater part of which was drawn from United States soil. In the past two years, the United States has produced almost 650,000,000 barrels. Yet in the face of these figures and the fact that at least 40 per cent of the oil produced is available for fuel purposes, there are only a few sections of the country where oil fuel is available in quantity for steam-generating purposes.

The great industrial region along the Atlantic coast must continue to use coal, for it is the cheaper fuel. The lack of shipping, the fact that the pipe lines are already overcrowded and that railroad conditions check a free movement of tank cars all combine to prevent oil from moving north either from Mexico or the gulf ports. Pennsylvania has coal and oil and uses the former because it is the cheapest. California has oil and no coal and naturally uses the oil. Actually, the use of oil as a substitute for coal as a fuel is largely a matter of locality, and where one or the other is the cheaper, there one will have the call over the other. There is oil enough, it would seem, but nature distributed it with a rather uneven hand.

A discussion presented at the spring meeting of the American Society of Mechanical Engineers, Worcester, Mass. The author, Ernest H. Peabody, is mechanical engineer for the Babcock & Wilcox Co., New York.

fireman can attend to about ten burners.

Reliable tests with oil fuel have shown that the boiler efficiency (i. e., the percentage of heat units in the oil which is actually absorbed by the steam leaving the boiler) may be as high as 83 to 84 per cent, although 78 to 80 per cent may be considered as good work, or even 75 per cent, in regular operating conditions. With coal fuel, while reports have been published by some pseudo authorities showing over 80 per cent, the writer believes that such high results with coal can only be obtained with large boiler units and the most efficient mechanical stokers. Certain it is that in hand-fired plants, 75 per cent is about the maximum, while 65 per cent may be considered good average work.

The advantage possessed by oil in respect to increased efficiency is due primarily to the small amount of air required for complete combustion in excess of the theoretical amount. This may be reduced to 10 per cent with oil, while the best tests with coal, hand-fired, show about 50 per cent, and good every-day working conditions run as high as 80 or 100 per cent.

Maintenance charges are decidedly less than with coal. It is true that higher furnace temperatures with oil as a rule require a better quality of firebrick, and danger may result to boiler heating surface with improper furnace arrangements and burners. These points are easily cared for.

The theory of burning oil is different and radically distinct from that controlling the burning of solid fuel. Pulverized coal of course in some respects closely approaches the character of burning oil, but coal fired by hand or by stokers remains substantially at rest during combustion, and the air is brought to it. In the case of oil, the fuel is moving and the air moves with it. In varying the rate of combustion of coal, the amount and velocity of the air through the fuel bed is altered—the intensity of the draft is increased or decreased. In the case of oil, the amount of fuel itself and the rate at which it enters the furnace must be varied, and the amount of air entering with it must be increased or decreased to preserve the proper ratio.

Method of Starting Fire

The lighting of an oil fire is a simple process. The oil pump is started to give the necessary oil pressure at the burners. The draft is opened to provide sufficient air for combustion. A lighted torch is then placed directly under the burner tip, and the oil is then turned on. If the oil is at the proper temperature and the atomizer is working properly, the spray at once bursts into flame. The spray must never be started without first lighting the torch; i. e., no oil must be injected into a "dark furnace," for if it is, an explosive mixture may be formed in the furnace which will cause damage if ignited.

There is little or no difference in the action of compressed air and steam in atomizing oil as far as boiler work is concerned, and if the air is compressed to over 30 pounds per square inch there is no special difference in the design of the burner itself. So far as the steam boiler furnace is concerned, however, the prospective user of oil may forget the air atomizer, the one instance in which its use might be considered being that in which the saving of fresh water (consumed by the steam atomizer) is a matter of importance. And in this case a mechanical atomizer will probably do the work effectively, and will be preferred.

Difference In Burner Types

As between the claims of the steam atomizer versus the mechanical atomizer, the issue is not as clear cut. On board ship, except in the case of harbor vessels or those making port every day, the steam atomizer has given way to the mechanical atomizer, where the saving in fresh water for the boiler makes the use of the latter type practically imperative.

There is practically nothing to choose between the two types in operating results under equivalent conditions. The steam atomizer is, however, more flexible, i. e., the individual burner has a greater range in capacity; it costs less to install, notwithstanding that it requires two lines of pipe (oil and steam), whereas the mechanical uses only one, and that for the oil. It is more readily applied to a coal-burning furnace, and conversely the furnace is more quickly converted back again to coal. It requires a lower oil pressure and not so high a temperature for viscous oils. It will also, in general, require less draft to operate. Furthermore, where special arrangements of burners are required, as in the case of the so-called "back-shot" burner (placed at the rear of the furnace), the steam atomizer is susceptible of a wide range in design which has been found useful.

For steam or air atomizing burners, oil pressures of 25 to 50 pounds at the pumps are adequate, and under certain conditions even less pressures. Overhead tanks a few feet above the burners, feeding the oil by gravity, have been employed, but this is inadvisable on account of danger of fire, and pumps are usually employed. Mechanical burners require pressures of 50 to 250 pounds at the burner tip, 200 pounds being a favorite pressure for the designer. The wide range of pressure is useful in adjusting the burner capacity. A steady oil pressure is a necessity for oil burners, a vital necessity for mechanical burners. Therefore large air chambers on the oil line are needed if the usual duplex reciprocatng pump is used. Rotary pumps are being introduced in the navy, and recently the screw pump has come into vogue. These pumps give a steady pressure of oil with little or no air cushioning, and the screw pump, particularly, seems to possess great possibilities for this work.

The matter of heating the oil is rather of a mechanical nature as its importance bears on the viscosity of the oil rather than on any thermal advantage. Steam atomizers will handle more viscous oil than the mechanical type, therefore steam heaters using exhaust steam from the pumps and capable of heating the oil to 100 to 125 degrees Fahr. are usually satisfactory. The mechanical burner requires that the viscosity of the oil be reduced to 8 to 10 degrees Engler to spray properly, and this means that the oil (according to its viscosity) must be heated to 120 to 280 degrees Fahr. The latter temperature is required for heavy viscous oils that are appearing on the market to a greater and greater extent. In a mechanical-burner installation it is evident that the oil heater is a most essential part of the equipment.

To a certain extent the amount of air being delivered to an oil fire is indicated by the color of the flame, a bright, intense white (so desirable with coal) usually indicating that too much air is being used, with a resulting loss in efficiency. Judging the fire by the flame, however, is only approximate; and it is better to resort to the simple device of diminishing the air supply until a light brown haze appears at the top of the chimney. This is preferable to a clear stack, as the latter gives no indication of excess air. The light haze is not at all objectionable but represents good conditions, provided—and this is a most important point—the smoke which produces the haze does not come from one or two burners only, while all the rest are working with oil.

Analysis of Stack Gases

Complete combustion in the furnace (that is, combustion in which all the carbon is burned to CO_2 and no CO is present) will give an analysis with coal in which the CO_2 content, plus the free-oxygen content, will add up consider-

ably higher in amount than an analysis of the products of similarly complete combustion of oil. The same percentage of CO_2 in the gas sample from coal indicates a much greater excess of air over that theoretically required than when oil is being burned. However, complete combustion of oil can be secured with a much lower amount of excess air than coal fuel; and it happens, therefore, that 14 per cent CO_2 in both cases represents the same satisfactory conditions in the furnace with both fuels. The amount of air theoretically required for the complete combustion of fuel oil of course varies with the composition of the oil, but it may be considered that about 14 pounds or 183 cubic feet at 60 degrees Fahr. represents the average.

In oil burning, "furnace volume" possesses a function similar to that of "grate area" in burning coal fuel. The rate of combustion of oil per cubic foot of furnace volume may be increased or decreased according to the intensity of the draft. A large furnace is necessary, therefore, if the draft is low, and the furnace can be made smaller if the draft is increased. This effect of furnace volume on the rate of oil combustion is often ignored or misunderstood; but it is of prime importance.

A high furnace temperature promotes the combustion of oil. Owing to the less quantity of excess air, oil furnaces are usually higher in temperature than those burning coal, so that good-quality firebrick with a fusing point at least 3000 degrees Fahr. should be used. Notwithstanding the higher temperature, if the burners are set and operate properly so that no flame impinges on the wall and no hard carbon is deposited the wear and tear should not be great.

New Charging Truck

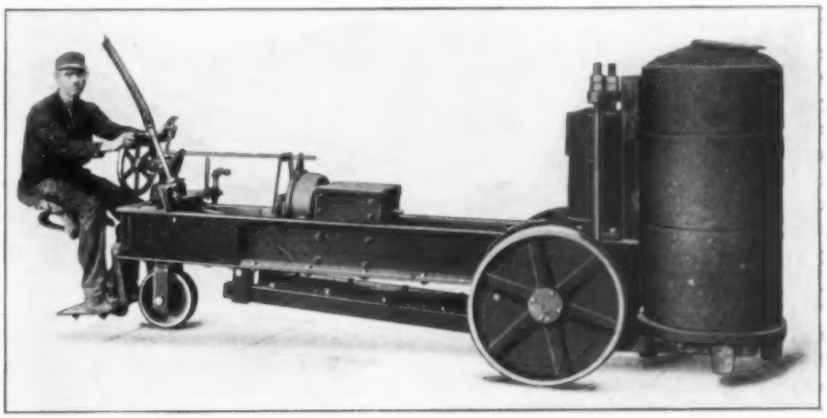
In the accompanying illustration is shown a truck for charging stacks of castings into malleable iron annealing ovens. It is operated by compressed air and is substantially constructed. The main frame consists of two steel channels from which are suspended the 4-inch steel elevating and lowering arms that are equipped with removable cast steel tangs for picking up the charging boxes. These tangs may be readily replaced when worn. The arms are raised by an air cylinder controlled from the operator's seat. A reversing air motor drives the truck, through a set of reduction gears and a standard motor truck differential, to pinions engaging in the internal gears on the driving wheels. The truck is guided by a standard motor truck steering worm, so arranged that the truck can turn in its own length. The air hose is suspended overhead. The air consumption is only 80 cubic feet per minute and the operating speed 90 to 120 feet per minute. This truck is built by the Brown Specialty Machinery Co., Chicago.

England to Bar German Steel Producers

Among the war objects ascribed to Germany in the present conflict is the possession of the rich iron ore and coal lands of French Lorraine and why Germany is said to be willing to make peace on the present geographical arrangement is that it would leave her in full possession of Russian ore supplies of immense proportions. But Germany apparently is building in vain, for she is not going to find it easy to win back the foreign markets for steel products that the war has deprived her of and in England, definite steps have been taken to shut out German steel from the British market.

Comprehensive plans have been drawn up by British iron and steel manufacturers which are intended to enable British mills to handle as much of the domestic and foreign reconstruction and rehabilitation of industry as possible, and at the same time shut out the sale of German-made products within the empire. These general plans were outlined sometime ago in a report of a special committee of the board of trade composed of leaders in the English industrial world. The iron and steel industry, as pointed out, must be restored to the commercial status of antewar times. This would tend to ease the strain of demobilization and also would afford time and means for the proper absorption of labor released from military service as well as enable proper distribution of labor, which had been drawn from other industries.

Another recommendation of the committee was that steps be taken to prevent Germany from laying up stocks of materials, which might enable her to conduct another long war. Other recommendations offered were to the barring from enemy countries during the period of reconstruction of all manufactured or semi-manufactured products of iron and steel, admission of ores and minerals necessary for the manufacture of iron and steel free of duty, and other necessary materials only in a natural or unworked state; restriction of the use of British ships in conveying raw materials or manufactured iron and steel to ports in enemy countries; a government subsidized foreign buying and selling organization and the restriction on the mining concessions to aliens. Bringing of all labor in the industry under the authority of one union also was suggested. Anti-dumping legislation was demanded and also that no iron or steel which do not bear a mark clearly showing point of origin be allowed into the United Kingdom.



AIR-OPERATED MALLEABLE IRON ANNEALING OVEN CHARGING TRUCK

The national research council, acting as the department of science and research of the council of national defense, has appointed a committee to investigate the fatigue phenomena of metals. Prof. H. F. Moore of the engineering experiment station of the University of Illinois is chairman. The committee is charged with the responsibility of developing a knowledge of the strength and durability of metals subjected to repeated stresses, such as ship structures, crank shafts of aircraft engines, and heavy ordnance.

A roll turning shop for its open-hearth finishing mill is being contemplated by the Republic Iron & Steel Co., Youngstown, O. Plans for the proposed building are now being drawn up and it is expected construction will be completed by the end of the year. Orders for necessary machinery are now being placed.

"I Am 29 Days Old—Look Me Over"

When the Steel Cargo Carrier Crawl Keys Started on Her Maiden Voyage for Salt Water, Less Than a Month Had Elapsed Since the Day Her Keel Was Laid at Ecorse

AMERICAN shipyards, spurred by the urgent demand for vessels to transport troops and supplies to Europe, are accomplishing feats that border on the marvelous. Everyone connected with the industry, from presidents down to heater boys, is fired by a steadily growing determination to defeat the Hun.

With a united industry working as near the theoretical 100 per cent as possible, it is not surprising that many shipbuilding records have been established, reports of which have appeared from time to time. It remained for a Great Lakes shipyard, however, to establish a shipbuilding record that may stand for a long time—it is unsafe to predict how long—and that will be recorded in shipbuilding annals as a monument of what determined men can do when the chief business of the country is war.

When the steel cargo carrier CRAWL KEYS took the water at the Ecorse, Mich., yards of the Great Lakes Engineering Works on July 27, a world's record in shipbuilding was established for, incredible as it may seem, this vessel was launched in 14 days from the time her keel was laid. Fifteen days later she was fully completed and accepted by the shipping board officials.

Great Lakes Triumph

THE urgent demand for ships to be turned out faster than the Huns can sink them has forced the shipyards of this country to exert every effort to launch tonnage. The results that are being obtained are surprising—instead of a nation to which maritime pursuits were practically ignored, ship construction has become one of the greatest of our industries.

The friendly rivalry between shipyards has fostered the incentive to make every move on the part of the men count and this has established shipbuilding records that were thought impossible a few years ago. Work is being accomplished in weeks where months formerly were required. It remained for a Great Lakes yard, however, to accomplish the almost unbelievable feat of actually sending an 80½ per cent complete ship in the water 14 days after her keel was laid. This is a record that seems certain to stand for some time.

As she steamed away from the shipyard on her long voyage to salt water she bore the following announcement in large letters on either side of her bridge house: "I AM 29 DAYS OLD —LOOK ME OVER."

When the CRAWL KEYS was launched, her hull was 93 per cent complete while the entire ship was 80.5 per cent finished. These figures are taken from inspection reports of the Emergency Fleet corporation.

The phenomenal record made in building the CRAWL KEYS was not due to any abnormal haste or to extremely fortunate circumstances. On the other hand, it was the direct outcome of careful planning on the part of the shipyard executives, together with the hearty co-operation of the company's workers.

Before the vessel's keel was laid, Charles Baisley, the yard superintendent, assembled his men and informed them that the company was determined to establish a world's record for shipbuilding. If any of the men were skeptical, Mr. Baisley had figures and facts to substantiate his claim that it was possible for a Great Lakes yard to set a record for steel shipbuilding. The men caught the spirit of enthusiasm necessary for carrying out big undertakings and the work began in earnest.

In considering the remarkable time in

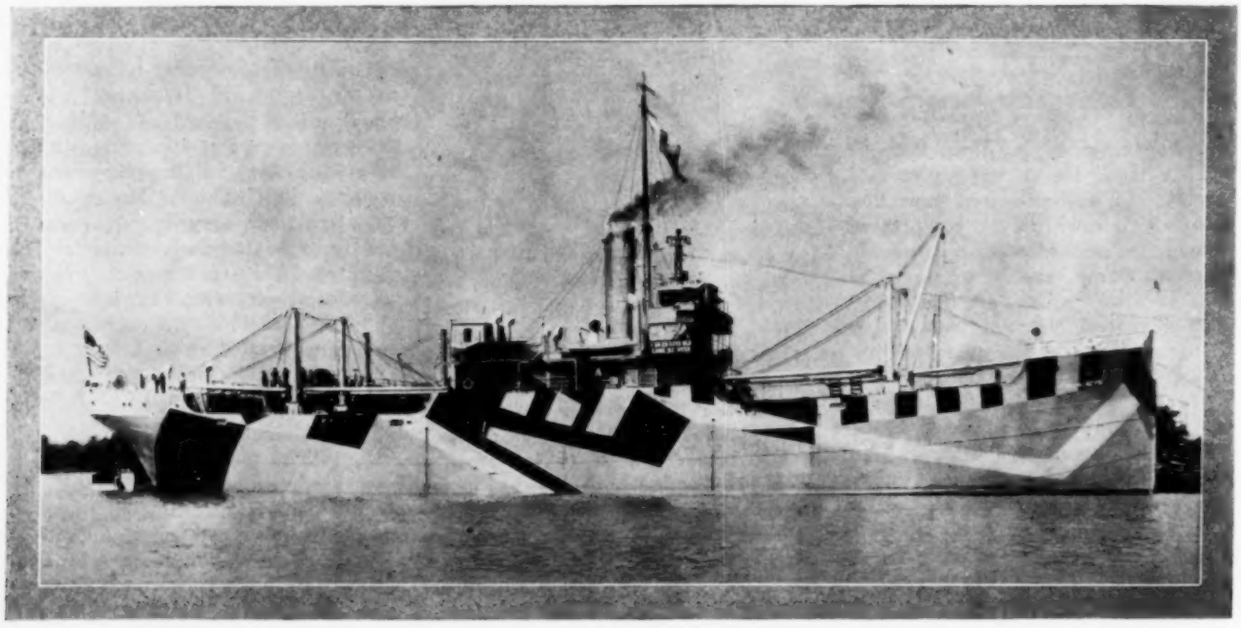
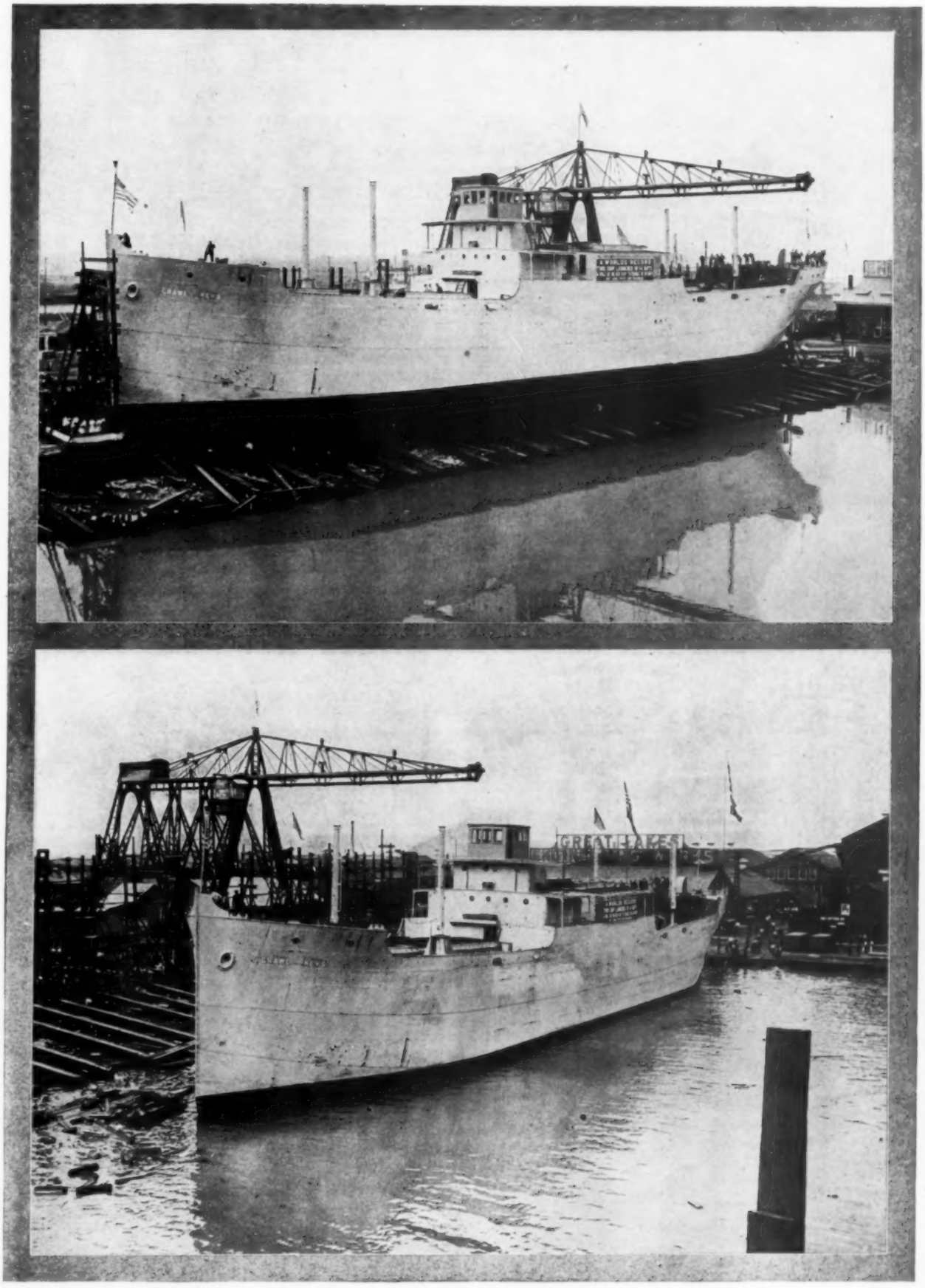


FIG. I—FAMOUS RECORD SHIP CRAWL KEYS CAMOUFLAGED AND READY FOR SEA



FIGS. 2 AND 3—IN THE UPPER VIEW ALL IS IN READINESS FOR LAUNCHING WHILE THE LOWER ILLUSTRATION SHOWS THE VESSEL AS SHE APPEARED JUST AFTER TAKING THE WATER

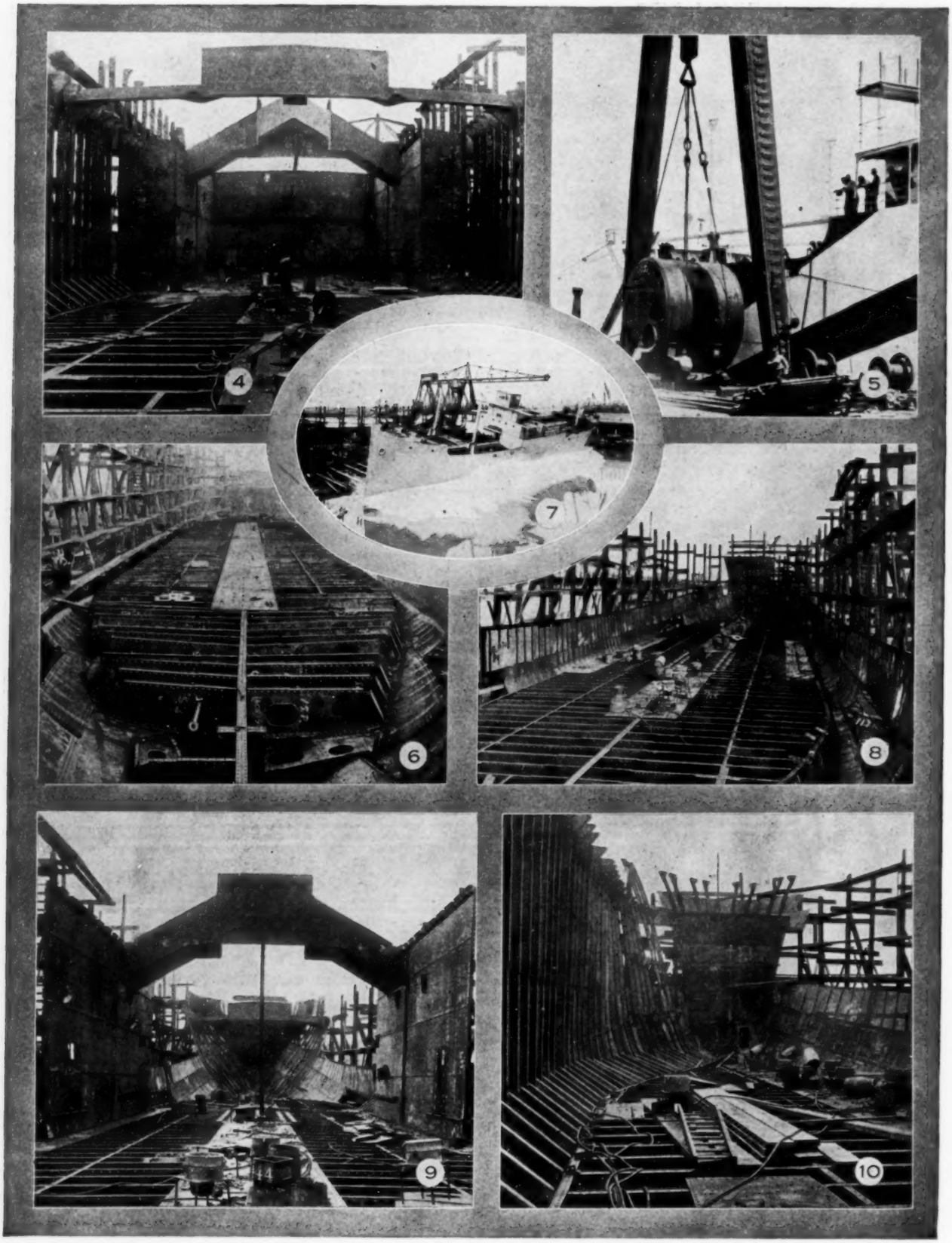


FIG. 4—LOOKING AFT TOWARD THE ENGINE ROOM BULKHEAD. FIG. 5—PREPARING TO INSTALL ONE OF THE BOILERS. THE SHEAR LEGS SWING AND LOWER IT IN PLACE IN THE HOLD. FIG. 6—HOW THE CRAWL KEYS LOOKED WHEN FIVE HOURS OLD. FIG. 7—CRAWL KEYS TAKING THE WATER. FIG. 8—LOOKING TOWARD THE FOREPEAK BULKHEAD. FIG. 9—LOOKING AFT SHOWING SOME OF THE FRAMES AND AFTER-PEAK BULKHEAD. FIG. 10—LOOKING FORWARD TOWARD THE FOREPEAK BULKHEAD AND SOME OF THE BOW FRAMING

which this vessel was built it must be borne in mind that she is not a fabricated ship. She was built from the keel up by the company which launched her.

The CRAWL KEYS is a single-deck, steel cargo carrier 261 feet overall length, 253 feet between perpendiculars, 43½ feet beam and 22½ feet deep. She is constructed with a double water bottom. She is propelled by an inverted type, triple-expansion engine having cylinders 19, 32 and 54 inches bore x 40-inch stroke. Steam is generated by two Scotch type marine boilers 14½ feet diameter x 11½ feet long, with a total working pressure of 190 pounds.

The deck house is placed amidships and contains the officers' quarters, chart house, bridge and pilot house while the firemen and crew are housed aft in the poop. The engine and boilers are installed amidships. Two large cargo hatches are conveniently located, one forward and the other aft of the deck house. Each hatch is served by two cargo masts equipped with quickly operated winches for cargo handling.

Work on the CRAWL KEYS began on July 11. The first steel plate for the keel was lowered into position at 11 a. m. Owing to the thoroughness with which the work had been planned, the building of the vessel progressed rapidly. Fig. 6 shows how the vessel looked at 5 p. m. on the day her keel was laid. As shown, the majority of her main frames are in position as well as her bottom plating. This vast amount of work was thus accomplished in five hours.

The following day, July 12, also saw rapid progress made. When the gangs of workers knocked off for the day the forepeak bulkhead and a number of tank top plates had been installed. This day also saw much of the staging on the waterside erected.

The next day, July 13, all the tank tops, margin plates and the shell above the tank top forward and aft as well as the fore and after peak frames were installed. Fig. 8 shows how the vessel looked at this stage of construction. The view is looking forward and shows the framing, some of the bilge plates and the forepeak bulkhead.

July 14 was Sunday and no work on the vessel was done on that day.

On the following day, however, July 15, the shipyard gangs more than made up for lost time. On this day work was done on the stern post, fantail, main frames in afterbody, coal bunkers, bulkheads, coal chutes, beams for spar deck and the after cargo hatch. The vessel as she looked on this day is shown in Fig. 9.

The next day, July 16, saw the side frames set up and work done on other parts as follows: Coal bunker bulkhead ends, all bilge brackets and hold bulkheads, boiler room bulkhead forward, all framing on one side, forepeak bulkhead, forepeak frames and the tank top in the boiler and engine rooms. Fig. 4 shows how the work had progressed by this time. This view is looking aft and shows the coal bunkers, coal chute and bulkhead between the engine and boiler rooms. The plate seen in the upper foreground is part of the forward cargo hatch. Fig. 10 is a view looking forward taken on the same day. This shows the forepeak bulkhead and also illustrates the progress made in framing and plating.

On July 17, work was done on tank top plates, the framing was finished and the spar-deck beams were placed in position. Some of the spar-deck plates were also installed in place. Hold stanchions were fitted, work was done on cargo hatches and girders under the deck were placed in position.

The engine room bulkhead was erected the next day, July 18, and all shell plates on the sheer strake were assembled, all furnaced plates were assembled in place and the launching ways were 50 per cent complete.

On July 19, the engine casing, boiler casing and poop bulkhead were installed and the spar deck completed. Work was also done on the cargo hatches, house, bulkheads, trunk decks, deck house, spars and poop deck.

The bridge deck beams were installed

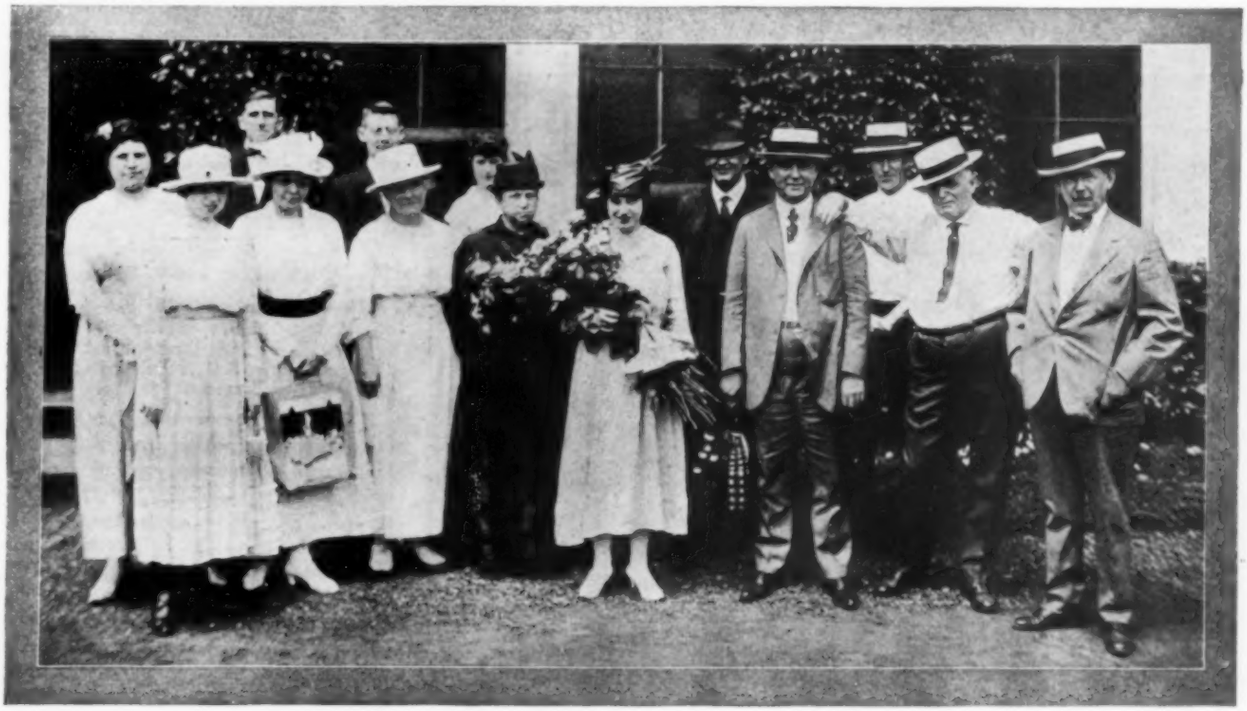


FIG. 11—THE CRAWL KEYS WAS CHRISTENED IN THE TIME HONORED MANNER—CHAMPAGNE WAS BROKEN OVER HER BOW BY A YOUNG LADY

The people in the illustration are, right to left, front row: John R. Russell, Charles E. Baisley, Charles Short and Miss May Jackson, the sponsor. Right to left, back row: Mr. Spaddock, boat boss; J. A. Ubsdell, vice president and general manager. Others in the party are guests of the sponsor.

on the following day, July 20, and work was also done on the house bulkhead casing, forecastle deck and forecastle bulkhead.

July 21 was Sunday. On the following day, July 22, work was done on the bridge deck plating, bulwark rails and deck angles on the spar deck. On July 23, work was done on the shell plating forward, forecastle deck, bridge deck house and chart house.

Small angles were installed and other inside work completed on July 24. Work was also done on the shaft tunnel and the derrick masts were fitted in place. The stern tube was bored out on July 25, the hull work was finished and the launching ways were completed. The next day, July 26, the propeller was placed in position on its shaft and the hatch beams were finished.

July 27 was the big day, 11 a. m. marking the end of the fourteenth day of progress. At this hour, Miss May Jackson, the vessel's sponsor, smashed a bottle of champagne on the vessel's bow, the launching triggers were released and, without a hitch, the record vessel slid down the ways into the waters of the Detroit river. As the ship took the water she bore a banner with the following inscription: "A world's record. This ship launched in 14 days and will be on the way to France in 30 days. We are with you 'Charlie.'"

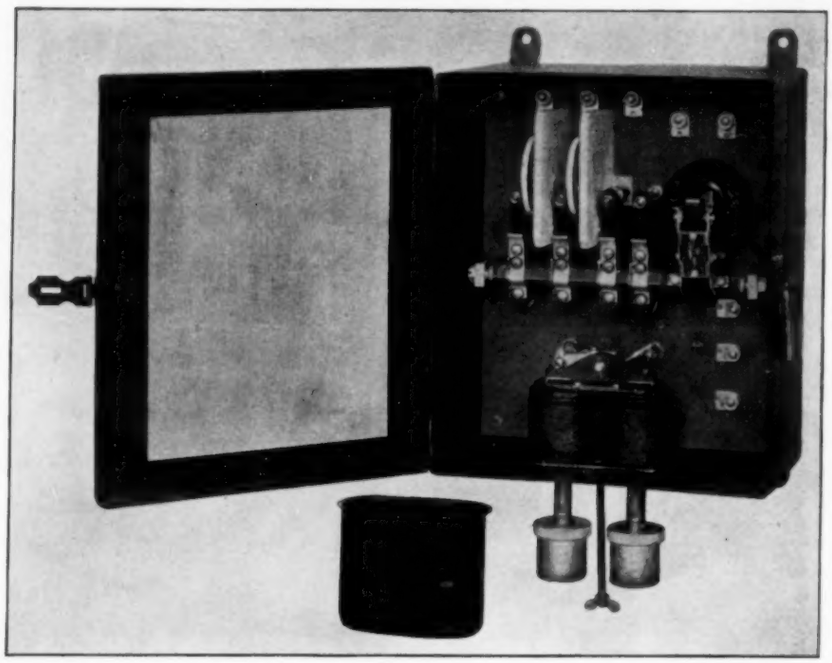
Charles E. Baisley, superintendent who supervised the work received the following congratulatory telegram from Charles M. Schwab:

"Have just learned that you are launching today a ship constructed in 14 days. You have my hearty congratulations. I was so pleased with you and your men when I visited your plant that I am not surprised to hear of this remarkable performance and I hope the work will give you the credit you deserve and I shall do my best to see that they do as far as myself and the Emergency Fleet corporation are concerned. We extend to you our profound thanks and hearty congratulations."

Sincerely,

(Signed) C. M. Schwab.

After the vessel was launched, the work was not permitted to slow up in the least. The same spirit that prompted the men to get the vessel in the water on record time, urged them on to an equal effort to make possible the delivery of the vessel to the shipping board in less than a month from the time the first keel plate was lowered in position.



ENCLOSED REMOTE CONTROL STARTER PROVIDED WITH UNDER VOLTAGE AND OVERLOAD PROTECTION FOR SMALL INDUCTION MOTOR

Device Controls Small Induction Motors

There has always been a demand for a device for starting small induction motors from remote points by throwing them directly across the line. Such a device, arranged for push-button control, was recently brought out by the General Electric Co., Schenectady, N. Y. This starter is applicable for use with motors ranging in capacity from 5 horsepower, 110 volts, to 7½ horsepower, 220, 440 and 550 volts. In addition to its starting function it provides protection against under voltage and overload. The device consists of a 25-ampere, 3-pole contractor with two inverse time limit gravity reset overload relays, mounted on a slate base totally enclosed in a strong sheet iron case.

A small push-button is used as a remote control switch. Completion of the starting circuit by pressing the "start" button energizes the coil of the magnetically operated switch, closing the contacts, which throw the motor directly on the line. Interruption of the circuit or a radical decrease in voltage permits the contacts to reopen by gravity thus stopping the motor, which cannot start again until the "start" button is pressed. The overload relays can be adjusted for various values ranging from normal up to 50 per cent above normal. They can also be adjusted over a wide range of time values. The relay trips automatically and resets by gravity.

Book Review

Mining Engineers' Handbook, edited by Robert Peele; cloth; 2375 pages, 4 x 7 inches; published by John Wiley & Sons, Inc., and furnished by THE IRON TRADE REVIEW for $5.

This book was written for the mining engineer in which respect it differs from many textbooks on mining that were prepared for the benefit of the student. A valid reason for bringing out this book, as the editor states, may be found in the fact that many books on subjects either omit or treat too briefly many subjects which constitute important parts of the professional equipment of the present day mining engineer.

It is a well known fact that in actual practice no well defined boundary exists between the fields of work of the mining engineer and the metallurgist. In planning this book, the question was carefully considered and the subjects properly handled to give each phase the space its importance warranted.

The completeness with which the book has been prepared is evidenced by the fact that it is divided into 44 sections as follows: Mineralogy, geology, earth excavation, explosives, rock excavation, tunneling, shaft sinking and boring, prospecting, hoisting plants, underground transport, drainage, ventilation, compressed air, electric power, surveying, mine maps and models, organization, accounts and costs, wages and welfare, mine air and hygiene, explosions and accidents, mining laws, examinations and valuations, aerial tramways and cableways, mechanical conveyors, ore dressing, ore sampling, assaying, ore testing, selling, purchasing, treatment of ores, gold amalgamation, etc.

Key to Peace in Iron of Lorraine

Future Tranquility of World Believed to Depend on Proper Distribution and Control of Vast Mineral Resources, Capture of Which by the Allies Might Speedily Bring Germany to Her Knees

BY SIDNEY PAIGE

ABOUT six months ago I became interested in the situation of Alsace-Lorraine from the standpoint of the policy of the United States in its relation to that area and possible peace terms between the allies and Germany. I feel that ultimately the problem of solving this difficulty must rest on geologists, engineers, metallurgists and technologists. Never before, perhaps, in the history of the world has the policy of a great nation been fraught with more momentous consequences than is the policy of the United States. To any thoughtful man impressed with the "velocity" of modern civilization, it must be evident that "direction" of movement is of vast importance, if the best interests of humanity are to be fostered. It is a significant fact that today there remains no great unpopulated territory. The westward movement of peoples, a movement impelled by economic pressure, a search for resources and later for markets, has slowed down. The great resources of the world are known and no longer may nations cramped by expanded industrial systems seek relief without meeting unparalleled opposition or without upsetting the industrial balance of the world.. It follows that the political task of modern life must relate to equitable economic adjustments of nations.

Problems of great difficulty confront modern civilization, despite the Utopian assumption that the last great war is being waged. These difficulties arise from inequalities in resources, nature of peoples, ethics, education, and all that this implies. The spirit of selfpreservation, persisting as selfishness, the desire for surplus and power, are apparently innate in human nature. But there are other traits in human nature which, it is the hope of many men, may dominate the world

There are two great aims in this war and their importance justifies any sacrifice. First, the arrogant, autocratic, military despotism of Germany must be crushed. Our second aim has to do with such redistributions of resources and territory as will tend to preserve peace and lead to normal industrial progress of nations. And it is in this connection that the iron ores of Lorraine are involved. It is well recognized that without the iron ores of Lorraine Germany could not have waged the present war; and, therefore, if these ores be taken by force of arms peace will follow almost at once. The general staffs of all the great nations are, no doubt, aware of this fact.

It must be recognized at once that in Lorraine, leaving Alsace out of the question for the moment, the contiguous France, there is today the greatest iron ore reserve of Europe. No single factor, perhaps, no group of facts involved in this war, deserves more thoughtful consideration. On the proper disposition of these reserves, on the nature of the barriers that may be set up or torn down in their utilization, on the spirit of co-operation or competition which enters into their disposal, depends in large measure the future peace of Europe.

Alsace-Lorraine has been the battle ground of Europe ever since the days of Caesar when, in 72 B. C., a German tribe invaded this territory and settled down. It is useless to dwell upon the number of times this territory changed hands; enough to say in 1871 France lost half of it to Germany. And it is significant to note that before this date it belonged wholly to France, left to her by the preliminary agreement of Versailles at the end of the Franco-German war, but that the German geologist, Hauchcorne, pointed out to Bismarck the potential value of this area, and France was persuaded to cede a strip of it by the subsequent treaty of Frankfort in exchange for land of military value near the fortress of Belfort. Since that time any lack of foresight on the part of French geologists has been corrected. They realize today the value of Alsace-Lorraine.

Coal and iron are so important in modern war, and the Germans are so well supplied with certain other necessities, are so ingenious in devising substitutes, that a consideration of such other necessities must take second place. Germany has vast resources in coal but poor resources in iron; but if the resources of Lorraine be included the resources of Germany in iron become vast. And if there be included French territory now held by Germany, she possesses the greatest resources by far on the eastern hemisphere. Of a production of 28,600,000 tons of iron ore in 1913 by Germany, 21,000,000 came from Lorraine; of coal Germany, without French territory, possesses more than half the resources of all Europe. England follows her in resources, Russia next, then Austria-Hungary, and fifth comes France. The Saar valley alone contains more coal than in all France today. One does not need a vivid imagination to picture the strength of this combination which at present Germany commands, the greatest coal and iron resources of Europe.

France, on the other hand, is deficient in coal. Before the war, her resources in iron were only slightly less than those of Germany, and of a total production of 21,700,000 tons by France, 19,500,000 came from the Longwy-Briey field, the identical field from which Germany draws her main supply. Germany, by unparalleled activity in the development of great coal resources before the war, was using not only all the iron she could command, but importing an increasing amount year by year from France. France, on the other hand, short of coal, was importing some 23,000,000 tons and exporting iron ore to Germany to the amount of one-tenth of the production of the Longwy-Briey field. Then came the war, and with it changes of the utmost significance, for not only does Germany now hold the entire Longwy-Briey iron field, but also, in the north of France, the coal field extending from Valenciennes to beyond Lens. Much has been written to account for the German onslaughts at Verdun; political reasons have been assigned. Until only recently, it would seem, has the true

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From a paper presented at the meeting of the New York section of the American Institute of Mining Engineers, May 23, and which will again be presented in a symposium on iron ore resources of the world at the October meeting of the institute in Milwaukee. The author, Sidney Paige, is associated with the United States geological survey.

significance of this maneuver been understood. The St. Mihiel salient and Verdun are in the path to the Lorraine iron fields it was but natural that the Germans should have desired to straighten this line.

Let us turn now to the war aims of French geologists and metallurgists. DeLaunay foresees France at the end of the war "triumphant, happy * * * We impose our wishes, we impose them completely. I do not consider any other hypothesis as possible, as worthy of discussion."

"TAKE LORRAINE WITH ITS MINERAL WEALTH FROM GERMANY AND THE WAR WILL SOON END." MAP SHOWS LORRAINE AND THE LONGWY-BRIEY DISTRICT IN RELATION TO THE ST. MIHIEL SECTOR IN WHICH THE AMERICANS LAUNCHED THEIR DRIVE SEPT. 12. HEAVY LINE INDICATES BATTLE LINE AS IT EXISTED ON THAT DATE; DOTTED LINE THE HINDENBURG LINE

And the conditions that he expects to be imposed include not only the restitution of Alsace-Lorraine but the annexation of sufficient German coal and coal fields to make up for the mineral deficiencies of France.

In 1913 France produced 40,000,000 tons of fuel, while her consumption reached 60,000,000 tons. She was required to import fuel from England, Germany and Belgium to supply her needs. Of coke, which is the principal element entering into the cost of pig iron, the situation before the war was even more unfavorable. The 3,000,000 tons which were imported approached the figure of domestic production. Lorraine alone produced 4,000,000 tons of coal but no coke, and consumed 6,000,000 tons of coal and 4,500,000 tons of coke, made from an additional 6,000,000 tons of coal. A total of 12,000,000 tons of coal, therefore, was consumed, there being a deficit of 8,000,000 tons of coal in Lorraine. If Lorraine is returned to France the deficit of that country in coal will rise from 23,000,000 tons to 31,000,000 tons. The French, therefore, propose that they also be given the coal of the Saar valley in Germany. Should this wish be realized, the consequences will be as follows: The Saar valley produces 10,000,000 tons of coal, which is consumed crude, and 3,000,000 tons of coal which is made into coke. This region consumes 5,000,000 tons of coal, 2,000,000 as crude coal and 3,000,000 transformed into coke. There is a surplus of 8,000,000 tons of coal, precisely the amount deficient in Lorraine.

But this apparent balance of resources takes on a different aspect when analyzed with respect to coke. Lorraine and the Saar valley together produce 17,000,000 tons of coal, divided as follows: Coal consumed crude, 14,000,000 tons; coal made into coke, 3,000,000 tons. This territory likewise consumed 17,000,000 tons of coal, but this amount is divided thus: Coal consumed crude, 8,000,000 tons; coal made into coke, 9,000,000 tons. Now, while the deficit of 23,000,000 tons which France faced before the war will not be augmented if Lorraine and the Saar valley are taken, her situation with respect to coke will be worse. Before the war the 23,000,000 tons deficit of France was divided as follows: 19,000,000 tons of crude coal; 4,000,000 tons of coal for coke. With the new arrangement these figures will become: 13,000,000 tons of crude coal; 10,000,000 tons of coal for coke. The importations of metallurgic coke into France in 1913 were divided as follows: From Germany, 2,393,000 tons; from Belgium, 547,000; from other countries, 130,000, a total of 3,070,000 tons. There is, therefore, a deficit of nearly 7,000,000 tons of coke which France must make up by import. The Saar valley does not produce good coking coal and France wants coking coal, not coke, for she wishes to obtain the by-products. England, before the war, consistently refused to send coking coal and would sell only coke.

France after the war will be forced to buy fuel. Where can she buy coking coal? And just here the basic principle is illuminated, that nations must co-operate.

If the situation in France with respect to ore also is examined, assuming that she possess, after the war, Lorraine and the Saar valley, it will be found that she faces an equal predicament, the finding of a market for her ores. The crux of the matter is reached when the situation with respect to the manufacture of steel is analyzed. France in 1913 produced 5,311,000 tons of pig iron, of which 957,000 tons were consumed by French foundries or exported crude. The remainder, 4,354,000 tons, was made into iron and steel. Lorraine and the Saar valley in 1913 produced 5,241,000 tons of pig iron, of which 4,502,000 tons were transformed into steel. France after the war would have a capacity of 11,000,000 tons of pig iron, of which 9,000,000 tons would be made into steel. Furnaces erected during the war would supply another million tons of steel. France thus would be compelled to dispose of 10,000,000 tons of steel. Where would this steel go? It may be shown that, even if a roseate view is taken of the French industrial situation after the war, France will be in a position, assuming that she possesses Lorraine and the Saar valley and ample coal from Germany, to produce 4,000,000 more tons of steel than she can dispose of. France cannot hope to develop exportation at the expense of the United States, a country which has enormously increased her capacity during the war. Nor can she hope to compete with Great Britain, who will, after the war, be in a strong position metallurgically. And as for Belgium, she will have some 1,184,000 tons for export. Therefore, the French will be driven into competition with the Germans.

The analysis brings out clearly the need of an economic policy with regard to the disposal of the Lorraine and contiguous French ores. It must be constantly borne in mind that this iron ore reserve is of supreme importance to all the great industrial nations of Europe.

Boosts Standardization of Motors

Association of Iron and Steel Electrical Engineers in Convention at Baltimore Discuss Designs and Ratings, Among Other Interesting Subjects—D. M. Petty is Elected President

BALTIMORE, Sept. 17.—Attended by about 150 members and associate members the twelfth annual convention of the Association of Iron and Steel Electrical Engineers was held at the Southern hotel in this city on Sept. 11-14. Officers were chosen as follows:

President, D. N. Petty, superintendent, electrical department, Lehigh Works, Bethlehem Steel Co., Bethlehem, Pa.

First vice president, B. W. Gilson, superintendent electrical department, Ohio works, Carnegie Steel Co., Youngstown, O.

Second vice president, H. C. Cronk, superintendent, electrical department, McKinney Steel Co., Cleveland.

Treasurer, James Farrington, superintendent, electrical department, LaBelle Iron Works, Steubenville, O.

Secretary, John F. Kelly, assistant to superintendent, electrical department, National Tube Co., McKeesport, Pa.

Board of directors, E. S. Jeffries, electrical engineer, Steel Co. of Canada, Hamilton, Ont.; G. W. Richardson, superintendent, electrical department, Pencoyd works, American Bridge Co., Pencoyd, Pa.; F. A. Wiley, superintendent, electrical department, Wisconsin Steel Co., South Chicago, Ill.; Walter Kennedy, superintendent electrical department, Pittsburgh Crucible Steel Co., Midland, Pa.

President C. A. Menk, superintendent, electrical department, Homestead Works, Carnegie Steel Co., Homestead, Pa., announced that Mr. Kelly, the present secretary, had been made permanent secretary of the association with headquarters at 513 Empire building, Pittsburgh. He will devote his entire time to work connected with the association and will give up his position with the National Tube Co.

Mr. Petty, the new president, who with the other officers, will take their offices on Jan. 1, 1919, was born on March 2, 1885, at Archdale, N. C. He graduated from Lehigh university in 1909 with the degree of electrical engineer and has been with the Bethlehem Steel Co. since that time.

Secretary Kelly reported that during the first eight months of the current year the association had admitted 30 active members, 80 associate members and one firm member. On the afternoon of Thursday a patriotic meeting was held and on that night the banquet took place. On the afternoon of Friday the members made an inspection trip of the furnaces, steel works and shipyards of the Bethlehem Steel Co. at Sparrows Point, Md.

One of the most interesting features of the convention was the report of the standardization committee, which was submitted on Friday. Through its chairman, F. B. Crosby, the motor subcommittee advocated single rating for large motors.

"A universal method of rating would greatly facilitate an intelligent comparison of competitive bids by insuring equality of normal output, temperature and commutation," the report stated. "It would also permit of direct comparison of existing installations.

"Present ratings among others are:

	(a)	(b)	(c)	(d)	(e)
Per cent. load...	100	100	100	100	100*
Hours	Cont.	Cont.	Cont.	Cont.	Cont.
Temp. raise....	40°C.	35°C.	40°C.	40°C.	50°C.
Per cent load..	125	125	125	125	...
Hours	2	Cont.	Cont.	Cont.	...
Temp. raise....	55°C.	50°C.	50°C.	Without injury	
Per cent load...	...	150	150	...	...
Hours	..	1	1	..	..
Temp. raise....	..	60°C.	60°C.	..	..

*Maximum.

"It has been suggested that a single rating be adopted for all large motors, alternating or direct current, reversing or non-reversing, which will take into account horsepower output and corresponding temperature rise for a specified period.

"To meet this condition, motors should be designed for a rated capacity equal to their estimated load plus the desired marginal capacity.

"From the standpoint of design and operation, it would have been far better if instead of (b) calling for a motor capable of carrying 125 per cent load continuously with 50 degrees Cent. rise, a motor of 25 per cent larger, capable of carrying 100 per cent load continuously with 50 degrees Cent. temperature rise had been specified."

The transmission subcommittee, through Chairman A. F. Hovey, touched on the need of "increasing radiation or connection to earth by water through pipe lines, fountain

method, natural and forced draft." It stated that in new construction, duct groups should not exceed 12 ducts per bank.

"High voltage cable improvements," the report continued, "include wrappings of metal foil on the individual conductor over the insulation to bring about rearrangement of electrical stress that tends to break down insulation. Metal foil also helps to conduct heat from the interior of the cable."

"In increasing incandescent lighting there has been noted a further progress toward standardization of voltage for lighting circuits; the 220-volt circuits are gradually being displaced by those of the 110-volt class on account of better lamp performance and lower cost of operation," it was reported by the illumination subcommittee through its chairman, Ward Harrison. "In the lower voltage range the tendency toward standardization on 110, 115, 120 volts in preference to intermediate steps is becoming more pronounced."

The standards committee recommended the appointment of a committee of three, one active member, one associate member, and one who may be either an active or an associate member, but who is not identified with an iron or steel firm nor a motor manufacturer; this committee to recommend a method of bringing about a standard or uniform design for certain size and type of motors for use in the steel industry to the end that each maker's motor would be interchangeable with another, in speeds, capacity, general dimensions, and as far as practicable in their component parts.

On the preceding day the question of standardization was discussed freely following the reading of a paper prepared by K. A. Pauly, electrical engineer, power and mining department, General Electric Co. In the absence of Mr. Pauly the paper was read by J. D. Wright. After the discussion Mr. Wright told the convention that 14 who talked on the subject favored standardization, seven of them asking that action be taken at once, and five endorsed the standards of the American Institute of Electrical Engineers, whose rating was recommended by Mr. Pauly. The selection of a committee to devise a standard was then strongly urged. No speaker openly opposed the idea of standardization while the convention as a whole was enthusiastically in favor of it. In the course of his discussion, H. H. Craiglow, Buckeye Steel Castings Co., said some definite methods of motor rating should be arrived at which all parties are willing to use. Mr. Cronk declared that from the customer's standpoint, when purchasing equipment, it would seem that a single rating on all large motors is most desirable.

"In my mind," he added, "under existing conditions the various ratings are much more satisfactory. This method of rating would not require more work on the part of customers if contractors were to submit their quotations on the same rating basis and this method of rating would be much more satisfactory to the operating engineer and those interested in the production and maintenance of equipment."

Gordon Fox, electrical engineer, Mark Mfg. Co., said that a rating based on maximum capacity is not entirely definite unless qualified by a statement as to the proportionate time periods during which this maximum capacity may be employed.

Would Standardize Design

Alfred J. Stanton, Bethlehem Steel Co., said he thought the engineers should get together and standardize a design rather than put the entire matter up to the manufacturers. Brent Wiley, Westinghouse Electric & Mfg. Co., commented on the statement in the paper of Mr. Pauly that "from 5 to 15 per cent more output at 50 degrees Cent. can be obtained from the same material if the motor is designed as a 50 degree motor than if it is designed for a rating of 35 or 40 degrees Cent. and operated at an overload." Conservation, Mr. Wiley said, is the most important subject today before national war bodies of the government.

Fred S. Crosby, Morgan Construction Co., Worcester, Mass., a strong advocate of standardization, expressed agreeable surprise that practically all the speakers favored the plan, although he said he was aware that some members of the association were opposed to it.

The rules for the safe operation of electric cranes as published in THE IRON TRADE REVIEW Sept. 12 were presented by the safety committee and generally approved in the discussion which followed. Among those who spoke on the subject were E. R. Kagarise, chief electrician, Thomas works, Brier Hill Steel Co., Niles, O.; Walter Fixter, Baldwin Locomotive Works, and R. B. Gerhart, while a paper on the subject by K. M. Raynor, Bethlehem Steel Co., was read.

Chairman Gilson, of the educational committee, read a paper on "Methods of Education for Electrical Employes of Iron and Steel Mills," which carried suggestions for training men in the electrical department of the steel industry and touched upon the educational course and methods of instruction pursued. H. A. Anderson of *The Blast Furnace and Steel Plant*, in a paper discussing the subject and read by Alfred M. Stachle, editor of that publication, recommended the establishment of community schools in large mill centers for instruction through a system of co-operation. Grant Armour, *The Electrical Journal*, Pittsburgh, recommended that students be informed of the advantage gained by reading technical magazines.

Walter Greenwood, safety engineer of the Ohio works of the Carnegie Steel Co., presented a paper on "Automatic Engine Stops" and made some interesting observations of safety devices in use.

R. H. McLain, engineer, power and mining department, General Electric Co., read an instructive paper on "Bridge Motors for Overhead Traveling Cranes" and said there are four things which tend to limit the rate of acceleration of a bridge motor: Automatic magnetic control can absolutely stop it; slipping of wheels can practically limit it; swinging of load can limit it in some cases; comfort of operator may limit it. An average acceleration of something like one to one and one-half feet per second, he stated, will be fast enough for cranes which travel at less than 500 feet per minute or make infrequent starts. Mr. McLain suggested five rules for the selection of motors and gearing for bridges. Mr. Cronk said he could not find where ladle cranes, 75 tons or over, will accelerate even one foot per second.

A. B. Holcomb said Mr. McLain's reference to the effect of the swinging of the load on the acceleration was interesting but that it seemed he neglected to mention that in nearly all cases the operator is hoisting at full speed when the bridge is started.

Mr. Wiley said that the Wisconsin Steel Co. has less trouble with the bridge motor on its cranes than it has with any other motion of the crane. If the bridge of a crane is of sufficient weight to require two motors the speaker said he thought that the most satisfactory method of drive is to place one motor each side of the bridge in the center of the span.

J. T. Sturtevant, Bethlehem Steel Co., read an interesting paper on "Electrically Driven Mills," which was discussed briefly. Lantern slides were used to illustrate an able paper on "Condensers and Condenser Engineer Practice," by D. D. Pendleton, Pittsburgh, district sales manager, Wheeler Condenser & Engineering Co. W. T. Snyder, National Tube Co., read an instructive paper on "Remote Controlled Sub-Station."

Wilson to Punish Disloyal Labor

Strikers Who Refuse to Accept Decision of War Labor Board to be Barred from Government Work and Inducted Into Army, President's Warning in Bridgeport Case—Miners Defiant

PRESIDENT WILSON'S note to the striking machinists of Bridgeport, Conn., warning them that unless they accepted the award of the war labor board and returned to work they would be barred from employment in any industry in control of the government for one year and would be inducted into military service, was heard throughout the land as the signal that labor profiteering has reached the point where the government is obliged to take a positive stand. While the message went directly to the Bridgeport district lodge of the International Association of Machinists, it clearly is applicable to "lawless and faithless" employes everywhere. Its real significance is that the government has become active instead of passive with regard to one of the most important features of the war labor problem and that it has set a punishment for those members of powerful labor organizations who think they are without the pale of justice.

The Bridgeport case demonstrated that the professions of organized labor leaders as to the loyalty of their followers must not be regarded too seriously. In this case the president of the international association ordered the men back to work and threatened them with banishment from the association—but the Bridgeport strikers went on striking, a law and organization unto themselves.

Another indication that the government has decided on a more stringent policy with reference to demands by labor is to be found in the decision of the war labor board refusing the demand of the employes at the Girard plant of the A. M. Byers Co., that the company sign the amalgamated wage scale. Twenty thousand miners in Shamokin, Pa., anthracite fields went on strike for an increase in wages and were summarily ordered back to work by Fuel Administrator Garfield. The men refused to return despite the warning by the government and the urging of their union's president.

The war department has taken over the plant of the Smith & Wesson Co., of Springfield, Mass., and will operate the plant and business to secure continuous production and prevent industrial disturbances. This action resulted from the war labor board's decision against the company's contract with individual employes, the company's dismissal of the agitators and the board's plan for the employes to elect representatives to press their demands for higher wages. The company would not assume the responsibility of fulfilling further orders on conditions laid down by the board.

President Forces Back-Down by Strikers

REBUKED for their disloyalty by President Wilson and with the threat of induction into the army hanging over their heads, the striking machinists of Bridgeport lost no time in returning to work. Eighty cents an hour for toolmakers and 70 cents for machinists, as awarded by the war labor board, looked big enough to them in comparison with the soldier's pay. They had wanted more but W. H. Johnston, president of the International Association of Machinists, warned them that they had received enough for one time and that holding out against such an award might lead to trouble. Trouble did come in the form of a letter from President Wilson giving the men the option of the machines or the trenches. The men met the following day and decided to go to work.

The President's letter in full follows:

"I am in receipt of your resolutions of Sept. 6 announcing that you have begun a strike against your employers in Bridgeport, Conn. You are members of the Bridgeport branches of the International Union of Machinists. As such and with the approval of the national officers of your union you signed an agreement to submit the questions as to the terms of your employment to the national war labor board and to abide the award which in accordance with the rules of procedure approved by me might be made.

"The members of the board were not able to reach a unanimous conclusion on all the issues presented and, as provided in its constitution, the questions upon which they did not agree were carried before an arbitrator, the unanimous choice of the members of the board.

"The arbitrator thus chosen has made an award which more than 90 per cent of the workers affected accept. You who constitute less than 10 per cent refuse to abide the award, although you are the best paid of the whole body of workers affected and are, therefore, least entitled to press a further increase in wages because of the high cost of living. But whatever the merits of the issue it is closed by the award. Your strike against it is a breach of faith calculated to reflect on the sincerity of national organized labor in proclaiming its acceptance of the principles and machinery of the national war labor board.

"If such disregard of the solemn adjudication of a tribunal to which both parties submitted their claims be temporized with, agreements become mere scraps of paper. If errors creep into awards the proper remedy is submission to the award with an application for rehearing to the tribunal. But to strike against the award is disloyalty and dishonor.

"The Smith & Wesson Company, of Springfield, Mass., engaged in government work, has refused to accept the mediation of the national war labor board and has flaunted its rules of decision approved by presidential proclamation. With my consent the war department has taken over the plant and business of the company to secure continuity in production and to prevent industrial disturbance.

"It is of the highest importance to secure compliance with reasonable rules and procedure for the settlement of industrial disputes. Having exercised a drastic remedy with recalcitrant employers it is my duty to use means equally well adapted to the end with lawless and faithless employes.

"Therefore, I desire that you return to work and abide by the award. If you refuse each one of you will be barred from employment in any war industry in the community in which the strike occurs for a period of one year. During that time the United States employment service will decline to obtain employment for you in any war industry elsewhere in the United States, as well as under the war and navy departments, the shipping board, the railway administration and all government agencies and the draft boards will be instructed to reject any claim of exemption based on your alleged usefulness on war production."

Priority in War Industry

Third Installment

Automatic Classifications

How They Originated How They Are Applied

Position of Subsidiary Contracts Shown

BY C. J. STARK

Editor, The Iron Trade Review

THE automatic priority classification which was announced late in July in circular No. 4, dated July 1, represents the crystallized experience of the priorities division, extending over a number of months of administration of the priority system. It is based upon the deductions from and the study of thousands of applications for priority certificates which have been passed upon by the priority authorities. It has been designed to reduce the number of cases where it has been found necessary to invoke the formal procedure incident to the issuance of a priority certificate. This procedure has involved the application by the user to the priorities committee; investigations of the claims presented by the committee; the rating of the purpose; and finally the issuance of the certificate. It is obvious that the time and effort required to pass upon the thousands of individual applications has been great; it is doubtful, however, whether the average person interested in priorities, has any conception of the magnitude of the detail and work pressed upon the priorities authorities by the process of individual application and consideration. Before the automatic classification was adopted, the applications for priorities certificates averaged about 2000 daily; since the automatic rating was put into effect, these have been reduced to probably 400 daily. Many of the latter still are purposes which the automatic classification should have taken care of, but the user, for reasons of misunderstanding or unfamiliarity with the official pamphlets governing priorities, or neglect on his part to study the rules, failed to apply the simpler method of rating his own needs. It is obvious that the automatic classification by eliminating the necessity for the greater number of applications and thereby the official procedure at Washington in formally returning a rating, is a great saver of time and hence expedites war production.

It was not possible, of course, until the priority system had been in operation for a considerable period and generalizations could be drawn from the priority division's experience that any perfected working plan of automatic classification could be put into effect. In determining upon the general classes of purpose which could be grouped under a certain specific rating, the records in the files at Washington covering the facts and circumstances upon which approximately 100,000 priority classifications were based were carefully examined and analyzed. It was found that 80 per cent of these was of such a character that they could be grouped in a comparatively few general classes. There are in fact, 23 classifications in the present automatic list. The original list has been extended somewhat by subsequent additions. It is quite likely that, as experience dictates, future amplification of this list will be made.

How Additions May Be Made

Some industries manufacturing a certain line, have raised the question how they may get their products listed under the automatic classification. The test of the plan is the number of applications for priority certificates for a particular line of work or product that have been put up to Washington in recent months. If these have been so numerous as to permit their being bulked under a single rating, and there are no complicating conditions, it is quite probable that the priority authorities may on their own volition, in time add this line to the automatic list. But any such action would be based entirely upon the experience of the priority committee as to the applications received covering this line of manufacture and not on any representation of the particular industry which is directly interested. It is well to keep in mind that the purpose of the automatic priority is to simplify the fixing of a priority rating. That means leaving it to the producer or user himself to apply the rating to his requirements in accordance with the prescribed rules laid down by the priority authorities.

It works out that many manufactured products to the extent that they are required for essential work, are already covered by the present automatic classification of section 8 and no specific inclusion in the list of automatic purposes is necessary. For example, the case of the manufacturer of foundry equipment may be considered. The automatic classification gives a rating to many products in the manufacture of which foundry equipment is required. Machine tools, it will be seen, are given automatically an A-6 rating, under section 8 of circular No. 4. This means that the manufacturer of machine tools may serve an A-6 priority accompanied by the prescribed affidavit upon the foundry furnishing him his castings. The foundrymen in turn, needing molding machines, may use the same priority rating upon the foundry equipment manufacturer. The latter in turn may use the same priority number for his own supplies except pig iron which is allocated and is not subject to any priority rating. In other words, the automatic priority rating allowed under section 8 extends all of the way back from the

original principal contract to subsidiary contracts calling for those supplies along the lines which are necessary to the fulfillment of the order within the delivery time required. Since various other classifications in the automatic list such as turbines, locomotives, ships, mining equipment, railroad supplies, cranes, textile machinery, farming implements, oil well supplies, etc., call for castings in their manufacture and hence foundry equipment, it is evident that many of the demands for foundry equipment for essential production, are covered by the automatic application to them of the same priority rating as the principal product. If this identical priority rating given to various manufacturing operations which enter into the finished product, is not sufficient, it may at any stage of the process be raised upon application to the priority committee to insure a sufficiently prompt delivery of material or supplies. There always remains to the individual manufacturer the recourse to an application to the priorities committee for a rerating which will be granted if proper cause is shown.

Confusion Over Section 7

Considerable confusion has existed as to the application to subsidiary contracts of the automatic priority rating given to orders of an A class or war character placed by the war or navy department and the Emergency Fleet corporation after June 30, 1918, as prescribed in Section 7, of circular 4, issued by the priorities division. This automatic rating given to such contracts is A-5. Such official rulings as have been announced at Washington, limits this priority rating to the original contract. The latter must be placed by duly authorized officers of the three departments and the priority rating will not apply to various firms or companies or their officers who are acting as agents of the government. If the order is placed by a company duly authorized to act as a direct agent of the government, and is endorsed personally by an officer of the army or navy, it is entitled to the automatic priority rating. No affidavit is required.

Under Section 7 as at present interpreted, the automatic A-5 rating does not carry on down the line to supplies, materials or equipment entering into the principal contract, but applies only as against the concern with which the order has been actually placed by the government department. Some steel companies have taken the position that the automatic A-5 rating could be applied to subsidiary

Automatic Classifications

Under Section 7 of Circular No. 4

Orders placed after June 30, 1918

	Rating
By navy department	A-5
By war department	A-5
By Emergency Fleet corporation	A-5

Under Section 8 of Circular No. 4

Materials, Supplies and Equipment for

Manufacture of turbines	A-4
Repair and construction of steam locomotives under jurisdiction United States railway administration	A-4
Production of electrodes	A-5
Manufacture of rope wire and wire rope	A-5
Building all water craft for and under direct contracts with Emergency Fleet corporation	A-5
Building of all cargo water craft (but not pleasure craft) except under construction by or for Emergency Fleet corporation	A-6
Manufacture of machine tools for working both metal and wood; of machinists' tools, of small tools, of hand tools, and of mining tools, machinery, and equipment	A-6
Operation and maintenance (not new construction, expansion, or replacement) of coke-oven plants, mines, smelters, furnaces, rolling mills, wire drawing mills, pipe and tube mills, employed in the production of fuels, metals and metal products	A-6
Manufacture of steam railroad materials, equipment, and supplies (other than locomotives) for use on railroads under the jurisdiction of the United States railroad administration	B-1
Manufacture of locomotive cranes and traveling cranes	B-1
Manufacture of electrical equipment other than turbines (but not electrical supplies as distinguished from equipment)	B-2
Manufacture of farm implements	B-2
Manufacture of textile machinery	B-2
Manufacture of tools, implements, machinery and equipment required for the production, harvesting, distribution, milling, canning, and refining of foods and feeds	B-2
Manufacture of binder twine and rope	B-2
Manufacture of oil-well supplies or equipment, for production of petroleum and natural gas, not including pipe lines, storage tanks of 1000 barrels capacity or over, tank cars, or refineries	B-2
Manufacture of iron and steel chain	B-2
Manufacture of repair parts to shoe machinery and for the operation and maintenance (not new construction, expansion, or replacement) of shoe manufacturing plants	B-2
Maintenance of jobbers' stocks of plates, sheets, bars, shapes, structural shapes, tubular products, wire and wire products, heavy hardware, farm implements, mining tools, mining machinery and mining equipment, oil-well supplies and similar products	B-4
Maintenance of stocks of fabricators of steel to be used in the construction of ships, buildings and bridges	B-4

contracts under a certain procedure and claim to have had some basis for their interpretation. As far as official rulings issued by Washington to date go, however, the A-5 rating does not apply beyond the principal contract and most companies are accepting that version. It would seem, however, that the confusion on this point calls for a clear statement from the priority authorities, setting forth what is permissible, and it may be that this will be issued shortly.

Under the present situation, whereby there is no official ground for applying the automatic A-5 rating under Section 7 to subsidiary contracts. The holder of the latter in many instances therefore will find it necessary either to secure a priority certificate or to utilize the automatic ratings under Section 8, covering a great many of the purposes for which material may be required. If the purposes are such that these automatic ratings may be employed, there will be no need therefore of applying for a priority certificate. As an illustration, the war department places an order for a locomotive crane. This order takes an automatic A-5 rating. The supplies, material or equipment entering into the completion of this order, however, take the automatic B-1 rating stipulated under Section 8.

Assume that the army ordered machine tools. This order would be entitled to an automatic A-5 rating under Section 7. The manufacturer of machine tools, however, in ordering the materials entering into their manufacture would be entitled only to the automatic A-6 rating provided in Section 8. In another suppositional case of the Emergency Fleet corporation ordering turbines, the order likewise would be entitled to an automatic A-5 rating. The manufacturer of the turbines, however, under Section 8, would receive an automatic A-4 priority rating on the materials or supplies he required to fill this order.

Theory of Automatic Rule

It is thus seen that the automatic rating undertakes to give a composite representation as to the urgency of the requirements of manufacturers of particular commodities and to grade them accordingly, though orders for the finished product themselves may be entitled to a higher or a lower rating. For example, it is determined from a thorough survey of the situation that every turbine manufactured is urgently required for war needs; on the whole, it follows it is more vital to the war program that the manufacturer of turbines should secure material promptly under a high rating than that a high rating should be given on the average order placed by the government department for turbines. If the manufacturer of turbines can secure materials promptly so that his output will not be curtailed, then the various government and war industries ordering turbines would not need a high priority rating on their orders for turbines to insure them that their requirements will be filled as desired.

As previously pointed out, wherever it may be found necessary to apply for a priority certificate on government work, the applications are expected to come through the government department or official for whose account the order has been placed. It is not necessary to follow this procedure strictly since the contractor may make application direct to the priorities committee, but it will avoid delay. A contractor working on a contract which is subsidiary to the direct order placed by a government department, who finds himself in need of priority assistance also may apply direct to the priorities committee. Applications for priority certificate on orders for the allied government, must be made through and with the written approval of the war mission representing the particular government in this country, and also with the written approval of the allied purchasing commission.

It will be noted that Section 7 gives automatic priority rating to all the orders placed by the army and navy departments or the Emergency Fleet corporation, while Section 2 applies the automatic priority to materials, supplies and equipment required for certain designated uses, in other words, for specified purposes. No date is stipulated in Section 8 as in Section 7. Affidavits are required under Section 8 certifying that the material will be used for the purpose given priority standing and that the recipient of the priority has filed such pledge as the government has required of the industry of which he is a member.

An automatic priority has the same weight as a priority certificate. It is designed to insure that deliveries of essential products and supplies shall be made as ordered. If lower priority ratings, whether automatic or by certificate, can be filled without interfering with the keeping of the delivery dates on the higher numbers, this may be done by the producer or the one upon whom the priority has been served.

Obituaries

GEORGE W. DICKIE, who died in Oakland, Cal., recently, was the constructor of the battleships OREGON, WISCONSIN and OHIO and the cruisers COLORADO and OLYMPIA, which were built at the Union Iron Works in San Francisco under his direction. Mr. Dickie was born in Arbroath, Scotland, July 17, 1844. He came to San Francisco in 1869 and became engineer for the Risdon Iron Works the following year, having received his early training in the North British railroad company's shops and in his father's shipyard. He became manager of the Union Iron Works in 1883 and left the company in 1905 to open consulting offices in San Francisco. He was a member of the American Society of Mechanical Engineers, the American Society of Naval Architects and Marine Engineers and the California Academy of Sciences. He was aiso one of the founders and for a time was president of the Technical Society of the Pacific Coast. Besides writing papers and other contributions to technical societies, he was the author of "Pumping and Hoisting Works."

John MacGregor, director of the Wellman-Seaver-Morgan Co., and prominently identified with the industrial development of Akron, O., died recently at the home of his son-in-law in Franconia, N. H., aged 86 years. Mr. MacGregor was one of the founders of the Akron Steel Forge Co. which moved to Muncie, Ind., during the gas boom days. He remained in Akron and became associated with the Webster, Camp & Lane Machine Co. This company brought out and developed the Hulett unloader and the Wellman-Seaver-Morgan Co., desiring to acquire the manufacturing rights of this machine, acquired the company. The former plant of the Webster, Camp & Lane Co., now is the Akron plant of the Wellman-Seaver-Morgan Co. Mr. MacGregor was educated at Jefferson college, class of 1882 and practiced law for several years before engaging in industrial enterprises.

Price Decline

Shown In Magnesite Brick—Standardization Meeting Is Called

Pittsburgh, Sept. 17.—Magnesite brick has declined in price as a result of a slow demand and some accumulation. New construction calling for this grade of brick is light and repair work has not been sufficient to absorb the supply. For some time past, prompt deliveries have been possible. Chrome brick is quoted unchanged, but the market largely is nominal, as the supply is extremely limited, due to the scarcity of chrome ore.

Bauxite brick is being taken as a substitute for chrome and a good business is reported. The market is firm on this grade and also on fire clay and silica, as the wants of the iron and steel industry continue heavy. Meanwhile, production has been suffering as a result of the shortage of labor; recent operations have been at about 75 per cent of capacity, as against the summer average of around 85 per cent. Operations usually taper off as the weather grows cooler, but the decline this year has been accelerated.

A meeting of the refractories trade, which will be attended by Charles Catlett, chairman of the refractories section of the chemical division of the war industries board, is to be held here this week and among other matters, it is understood, the standardization of shapes and sizes will be thoroughly threshed out. The new preference list, which places refractories in Class 4, also is likely to have consideration, for it puts the industry, already suffering from a labor scarcity, pretty far away from getting assistance in this direction.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$45.00 to 55.00
Missouri-Illinois	55.00 to 65.00
Ohio	45.00 to 50.00
Kentucky	45.00 to 55.00
New England	55.00 to 65.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$40.00 to 50.00
Ohio	35.00
New England	48.00 to 58.00

SILICA BRICK

Pennsylvania	$50.00 to 60.00
Chicago	55.00 to 65.50
Birmingham	45.00 to 55.00

MAGNESITE BRICK
(Per Net Ton)

4 x 4½ x 2½	$105.00 to 115.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$135.00 to 140.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	180.00 base
76 per cent	100.00 base

End German Ownership in Industrial Companies

Pittsburgh, Sept. 17.—H. Koppers Co., Pittsburgh, and the Orenstein-Arthur Koppel Co., Koppel, Pa., are now 100 per cent American companies, enemy alien interest in these concerns having been eliminated last week through sales conducted for the custodian of alien enemy property. A fifth interest of the H. Koppers Co., or 3000 shares, held in the name of Heinrich Koppers of Germany, were sold on the Pittsburgh stock exchange Sept. 13 at $100.75 per share, or a total of $302,250. The buyer was Hamilton Stewart, treasurer of the Koppers company and secretary of the Harbison-Walker Refractories Co., which previously had owned controlling interest.

The Orenstein-Arthur Koppel Co., which was seized by the alien property custodian some time ago, not only was entirely German-owned and controlled but operated under a German charter, in which respect it was alone among the industrial organizations of the country. The sale of this company, which included everything tangible owned by the company, was held at the plant at Koppel on Sept. 12. The successful bidder was W. A. Chamberlain, auditor of the Pressed Steel Car Co., Pittsburgh, whose bid was $1,312,000. Actual transfer of this company cannot take place until Sept. 27, as under the terms of the sale, the successful bid must remain open for 15 days after the sale and in the meantime anyone is privileged to post with the government a higher offer. There were seven other bidders for the properties, which as a going concern were rated to be worth $2,500,000 and the physical valuation of wihch were estimated by the government at $1,500,000.

The L. Hardy Co., Worcester, Mass., maker of machine knives, has presented its employes with bonus checks, representing $10 for each year of service. The checks ranged from one year to 26 years, one man receiving $260. Every person who had been in the employ of the company six months or more received a bonus check Sept. 6.

Much Steel

Will Be Saved By Suspension of Building of Ford Cars

Detroit, Sept. 17.—Through the recent action of the Ford Motor Co., of Detroit, with its branches all over the country, in suspending production of passenger motor cars, the government has been saved 800,000 tons of high grade steel. This is the amount it would have taken to build the 123,000 cars the company could have turned out in the last six months of 1918 with government permission. Each car required 1300 pounds of steel.

Detroit's stove industry is on a strictly war footing. In addition to producing heating equipment for cantonments in this country, the large plants are making heating appliances from charcoal burning trench stoves to hot air furnaces for overseas service. As a labor and material conservation measure it has been decided to abandon all "frills" on domestic stoves and ranges. The assortment of styles will be reduced 75 per cent; no new patterns will be made while ovens and doors will have no tin lining.

Ford Motor Co. of Canada, Ltd., which maintains its main plant at Ford, Ont., on the Detroit river, shows a surplus of $177,202 for the fiscal year ending July 31, compared with $2,066,455 in 1917. The decrease is explained by G. M. McGregor, vice president and general manager, in his annual statement, as due to large increases in stock on hand and accounts receivable which totaled $8,498,260 for the year against $5,167,039 for 1917. Practically all of the surplus has been put into stock because of the increasing difficulty in obtaining material. While the price of the car increased 20 per cent in Canada the cost of production increased 24 per cent in 1918. The company's capital stock is held at $10,000,000.

Ford will start work Jan. 1 on the construction of a tractor plant on Green island, in the Hudson river, near Albany, N. Y. It will employ 15,000 men.

The Lincoln Motor Co. of Detroit, and the Buick Motor Co., of Flint, Mich., have received new contracts for the production of 12-cylinder Liberty motors.

The Anderson Forge & Machine Co. will build an addition to its die shop and office building.

The Smith Carburetor Co. has let a contract for a 2-story reinforced concrete factory addition.

The Diamond Power Specialty Co., will erect a 2-story brick and steel office building.

Formal Coke Order Issued

Prices Reduced 30 Cents Per Ton in Most Districts on Run of Ovens By-Product and Selected Foundry Coke

WASHINGTON, Sept. 17.—Effective Sept. 3, the formal order of the federal fuel administration relating to coke prices has just been issued. It is dated Aug. 31 and makes the base price for run of ovens by-product coke and selected foundry coke $5.70 and $6.70 per ton, respectively, except as modified by ruling applications to different districts. This works out as a reduction of 30 cents a ton in most districts but represents an advance of 75 cents to $1.75 in Alabama. The formal order follows:

"It appearing to the United States fuel administrator that in most places where by-product coke is produced there are certain local switching charges which make the price of by-product coke higher than beehive coke, that contracts for high-priced coal have generally expired, that the supply of coal is more regular, and that the price of coal has been reduced 10c a ton.

"The United States fuel administrator, acting under authority of an executive order of the President of the United States, dated Aug. 23, 1917, appointing said administrator, and of subsequent executive orders, and in furtherance of the purpose of said orders and of the act of congress therein referred to and approved Aug. 10, 1917,

"Hereby orders and directs that until further or other orders in the premises and subjects to modification hereafter from time to time and at any time, the following regulations additional to those already set forth shall be in effect beginning 7 a. m., Sept. 3, 1918:

"(1) Those parts of the orders of Nov. 17 and Nov. 24, 1917, and of Feb. 28, March 19, and March 29, 1918, which relate to by-product coke, are hereby cancelled on and after 7 a. m., Sept. 3, 1918.

"(2) The price of coke shall be understood as the price per ton of 2000 lbs., f. o. b. cars at the plant where the coke is manufactured.

"(3) All the maximum prices mentioned herein shall apply to car lots sold to consumers or to dealers for wagon delivery; any commissions paid to selling agencies, or margins allowed to jobbers, shall be paid by the vendors, and shall not be added to the prices established hereby.

"(4) In all cases where wagon deliveries are made by the coke producer, a reasonable charge for such handling and delivery may be made, subject to the approval of the federal fuel administrator for the state in which such delivery is made.

"(5) The base price for by-product coke shall be as follows: Run of ovens, $5.70; selected foundry, $6.70.

"(6) Except as otherwise provided herein, the maximum price, f. o. b. cars at point of production for each grade of by-product coke mentioned in section (5) hereof, shall be the sum of the base price for such grade, and the freight rate from the competing beehive coke district which takes the lowest freight rate to the point where such by-product coke is produced.

"(7) By-product coke in New England.—For coke produced in New England, the maximum prices, f. o. b. cars at point of production, for each grade of by-product coke mentioned in section (5) hereof shall be the base price for such grade plus the freight rate from the competing beehive district which takes the lowest freight rate to the point where such coke is produced, and plus 7c for each advance of 5c above 60c in the freight charges per ton (2240 lbs.) of coal for water transportation on the coal used in the manufacture of such coke.

"(8) By-product coke at Chattanooga, Tenn.—The maximum price, f. o. b. cars at ovens, for coke made in by-product ovens at Chattanooga, Tenn., shall be seven dollars and ninety-five cents ($7.95) for run of oven coke, and eight dollars and ninety-five cents ($8.95) for selected foundry coke.

"(9) By-product coke in Alabama.—The maximum price, f. o. b. cars at point of production, for coke made in by-product ovens, in the state of Alabama, shall be seven dollars and seventy-five cents ($7.75) for run of oven coke, and eight dollars and seventy-five cents ($8.75) for selected foundry coke.

"(10) By-product coke in Washington.—The maximum price, f. o. b. cars at point of production, for coke made in by-product ovens in the state of Washington, shall be ten dollars ($10.00) for run of oven coke, and eleven dollars ($11.00) for selected foundry coke."

War Trade Board Collects Tinplate Stocks

Washington, Sept. 17.—Under the recent revised regulations of the war trade board, tinplate for export must be purchased direct from the manufacturer. Since it has been learned that a considerable quantity of this commodity was purchased for export from sources other than the mill, this board desires to know the exact amount of tinplate held in stock by firms that desire to export it direct to foreign buyers or to sell it to exporters, who have orders from foreign buyers.

To collect these data, a blank is being sent out by the board's bureau of exports which reads as follows:

Description .....
Amount .....
Maker's name.....
Location .....
When bought.....
From whom bought.....
Purchase price per base box.....
If sold for export, give date of sale.....
To whom sold.....
For what purpose.....
Selling price per base box, F. O. B. or C. I. F.....
.....
If not sold, state why.....
What applications have been filed for licenses (give number) .....
.....
.....
Has license ever been issued.....
Were any applications refused.....
If permission was granted you to export this tin plate, how much time would be required by you in order to make clearance.....
If this tin plate is not sold, have you an export customer to whom it could be sold, and if so, for what purpose and at what approximate price.....
.....
.....
.....
.....
.....
.....
Name of firm reporting.....
By.....
City.....
Address.....

Vote Favorably on Merger

After the recent favorable vote of stockholders at special meetings held at Hoboken, N. J., arrangements are being made to merge the International Harvester Co. of New Jersey and the International Harvester Corp. The stock issues of the two corporations will be combined. This is in response to the government's dictum ending the antitrust suit.

This means that one company known as the International Harvester Co., will have a capital stock equal to the sum of stocks preferred and common of the two present companies or $60,000,000 preferred and $80,000,000 common. Each share will have a par value of $100, the preferred stock being preferred both as to dividends and assets, as was the preferred stock of the two merging companies. The holders of the common stock of the new company will have the same rights as to assets as the holders of the common stock of each of the merging corporations.

The preferred stock will be issued in exchange share for share for the preferred stock of each of the merging companies.

Two shares of the common stock of the new company will be exchanged for one share of that of the International Harvester Co. of New Jersey and one share of common stock of the International Harvester Corp. One and one-third shares of common stock of the new company will be issued for each share of common stock of the International Harvester Co. of New Jersey surrendered and two-thirds of one share of common stock of the new company will be issued for each share of common stock of the International Harvester Corp. surrendered.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Fourth Loan Dominates Financial Affairs

PREPARATIONS for the fourth Liberty loan campaign, now only a fortnight away, dominate all other financial considerations. The far reaching plans for the big loan drive are being felt in many directions. Thus Republican and Democratic organizations in New York and other states are discussing a proposal to suspend the fall political campaign while the subscription books to the loan remain open. General debate in the house, at Washington, was postponed a day last week, while that body passed the administration measure designed to facilitate the sale of Liberty bonds. This measure, as outlined by Secretary McAdoo last week, would increase the attractiveness of the forthcoming issue and at the same time protect the price of the outstanding war bonds. This object is to be accomplished by exemption from federal and other taxation the income of $30,000 of the new bonds held by any individual or firm; while in the case of the old 4 and 4¼ per cent bonds, the already existing exemption of $5000 would be increased by $45,000, to prevent sacrificing of these bonds by holders anxious for tax free securities. The effectiveness of the plan is augured by the previous rise in the price of the tax free 3½s of the first loan to 102½ while the 4s and 4¼s ruled at 96 and below. After Mr. McAdoo's proposals were submitted last week, however, the 4s and 4¼s rose on the stock exchange as much as 3½ points.

The thrilling news of Pershing's victory helped stocks to an irregular recovery last Saturday, following a steady decline which had caused losses ranging from 5 to 10 points in industrial shares to 4 to 7 in active railways. The reason for this decline is ascribed indirectly to the plans for the next loan. On Sept. 6 the stock exchange authorities announced that all members must report each day to the stock exchange committee the amount of time or demand loans on collateral outstanding against such member. The purpose of this order manifestly was that for the present there shall be devoted to the security markets no additional credit beyond the funds now so used. In other words, the financial leaders are opposed to the use of additional credit in financing a rise in stocks at this time. The treasury department is seeking the largest volume of funds that can be secured without imposing too great a strain and consequently there must be curtailment in every other branch of financial enterprise. Meanwhile, the world's financial centers are watching the progress of America's tremendous financial program, involving the development of a revenue bill which is expected nearly to triple last year's levies, and at the same time float a war loan of record breaking proportions. The thorough organization of the nation's financial machinery, backed by the patriotism of the American people, assures both plans complete success.

Foundry Buys Shop

The Northern Foundry Co., Marinette, Wis., which opened a malleable and gray iron shop in the plant of the former Marinette Iron Works last fall, has purchased the adjoining buildings, formerly used as a machine shop by the Merryman-Carpenter Co. ,and now tenanted by the Landover Truck Co., formerly of Chicago. The shop will be connected with the foundry and will be used both for casting and machine work as soon as the Landover company completes arrangements for new quarters. The latter may, however, become a part of the Northern company, for which it is doing considerable machine work, and continue to occupy as much of the building as its needs require.

Private Contracts

Now Being Taken In Benzol—Want Phenol Abroad

New York, Sept. 14.—In view of expectations by the producers of benzol, that there will be a sufficient supply of this product to meet practically all requirements, commercial consumers now are able to contract for delivery over the year beginning this month. At the same time, producers are not inclined to contract beyond Jan. 1 at present prices. The market for delivery the last four months of this year ranges from 22 to 27 cents per gallon at producers' plants, according to quantity.

Coke Oven By-Products

Spot	
Per Gallon at Producers Plant	
Pure benzol	$0.22 to .27
Toluol (on sales sanctioned by government) (tank cars)	1.50
Toluol (on sales sanctioned by government) (drums)	1.55
Toluol (for government)	1.50
Solvent naphtha	.20 to .25
Per Pound at Producers Plant	
Phenol	$0.42 to .46
Naphthalin (nominal)	.09 to .095
Per 100 Pounds at Seaboard	
Sulphate of ammonia (to fertilizer trade)	$4.50 to 4.75
Contract	
Pure benzol	nominal
Toluol	no market
Solvent naphtha	nominal
Per Pound at Producers Plant	
Phenol	nominal
Per 100 Pounds at Seaboard	
Sulphate of ammonia (for commercial use)	no market
Sulphate of ammonia (for government)	$4.50

Good export inquiry for phenol is in the market, but the war trade board still is disinclined to grant licenses, and consequently, stocks of phenol are accumulating. The market is quoted 42 to 46 cents per pound at producers' plants.

Producers of sulphate of ammonia are allotting supplies of this product as fairly as they can among the fertilizer manufacturers and other users. In view of the uncertainty of the government's requirements, orders are being taken for this material only for spot and nearby delivery at around $4.50 to $4.75 per 100 pounds at tidewater.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

HARRY L. WILLIAMS, who recently disposed of his interests in the firm of Hickman, Williams & Co., dealers in pig iron, coke, and kindred products, was born in southern Kentucky in 1863. He began work with the Rising Fawn Iron Works in Georgia in 1880 and remained with that concern and the Chattanooga Iron Co., which was under the same management, for five years. At that time he was commissioned by the Rising Fawn Iron Co., to assist in selling its iron, with headquarters at Cincinnati. During the next six years he sold iron for the Rising Fawn Iron Co., and Rogers, Brown & Co., locating at Louisville, Ky., St. Louis and Nashville, Tenn., in turn. In 1891 he joined with R. B. Hickman in the partnership of Hickman, Williams & Co., with headquarters in Louisville. In 1893 he removed to Chicago and opened an office for the firm there. About 20 years later, Hickman, Williams & Co. was incorporated and in May, 1914, Mr. Williams bought out his associates and proceeded to carry out plans which he had long had in mind, admitting the younger men of the organization to larger participation in the ownership of the business. In July of this year he decided to devote his entire time to personal interests and sold out to his associates. Through his connection with the pig iron business in the west and south, Mr. Williams has a wide acquaintance. Possessed of high ideals and gifted an attractive personality, he has made many firm friends throughout the iron and steel business. As president of Hickman, Williams & Co. Mr. Williams has been succeeded by T. Coleman Ward, former vice president and director.

F. W. Henderson has been named general manager of the Signal Motor Truck Co., Detroit, to succeed John Squires.

James H. Foster, of the Hydraulic Pressed Steel Co., Cleveland, has been made a director of the Republic Motor Truck Co., Alma, Mich.

M. A. Steele, former manager of the Poughkeepsie plant of the Moline Plow Co., has been made assistant to the president of the Stover Mfg. & Engine Co., Freeport, Ill.

Charles G. Roebling, president of the John A. Roebling's Sons Co., and the New Jersey Wire Cloth Co., Trenton, N. J., is seriously ill at his home, 333 West State street, that city.

Joseph Davis, vice president and comptroller of the American Locomotive Co., has been elected a director of the company, succeeding the late Sylvanus L. Schoonmaker.

HARRY LEE WILLIAMS

W. L. Chatfield has resigned as superintendent of the Manufacturers Foundry Co., Milwaukee, and has accepted a position as foundry superintendent and chemist of the Kanawha Mfg. Co., Charleston, W. Va.

A. C. Callan, with offices in the Oregon building, Portland, Oreg., representative of the Pacific Coast Steel Co., has charge of the construction of its new steel plant at Willbridge, Ore.

Edward B. Gay, Jr., while maintaining his consulting engineering office in Philadelphia, has been appointed hull-works engineer with the American International Shipbuilding Corp., Hog island, Pa.

Fred W. Ramsey, president of the Cleveland Metal Products Co., Cleveland, has been named at Columbus, as director for the Ohio campaign to raise $10,560,000 in the state war chest drive to begin Nov. 11.

George M. Verity, president of the American Rolling Mill Co., Middletown, O., has been selected to take charge of the Cincinnati district in a campaign about to be inaugurated to raise funds to carry on war camp community service work.

Zeno D. Barnes, who has been connected with the Westinghouse Air Brake Co. in the capacity of nonferrous metallurgist, now is affiliated with the general operating department of the Aluminum Castings Co., Cleveland.

George J. Long, vice president and director of the United States Cast Iron Pipe & Foundry Co., and manager of its Louisville, Ky., plant, is slowly recovering from a stroke of apoplexy which he sustained earlier in the month.

W. E. Williams of the Braden Mfg. Co., Terre Haute, Ind., metal roofing, has been elected president of the Terre Haute Manufacturers' association, that city. L. M. Eyke, Terre Haute Malleable Iron Co., was made vice president of the organization.

P. P. Crampton, formerly affiliated with the Hull Iron & Steel Foundries, Rigaud, Que., has resigned from that concern and is now a partner in the firm of Burnett & Crampton, engineers and iron founders. Mr. Burnett was formerly the electrical engineer for the Canada Cement Co., Montreal.

John Adam Snyder, district sales manager in New England territory for the American Tube & Stamping Co., Bridgeport, Conn., for several years, has been placed in charge of the company's recently opened branch office in room 1114, Park building, Worcester, Mass.

William Hendron, who for the past 16 years has been employed as general foreman by the Peoples Gas Light & Coke Co., Chicago, was made night master mechanic at No. 2 plant of the Inland Steel Co., Indiana Harbor, Ind. W. J. Hammond has been promoted to the position of assistant traffic manager.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOHN WEARE, who has represented the United States Steel Products Co. in France since the year before the war, has received a commission in the United States army in that country. Prior to opening up its Paris branch, in 1914, Mr. Weare was identified with the Steel Products company's New York office, for which service he was fitted by the United States Steel Corp.'s special training course at the mills, after taking a course at the Harvard university graduate school of business. He was born in Chicago, was graduated from its public schools and the University of Chicago, and holds the A. B. degree of Harvard as of 1907. From 1907 to 1909, he was lecturer in English of the faculty of letters in the University of Lyons, France. He has been honorary secretary of the American chamber of commerce in Paris since early in 1917, is a member of the Harvard club of New York, the Cercle Volney, the American and Automobile clubs of Paris and is a member of the Sons of the American Revolution on both sides of his family. He also is a member of the Society of Colonial Wars. His father Charles A. Weare was formerly identified with the Chicago board of trade.

Norval A. Hawkins, general sales manager of the Ford Motor Co., Detroit, has given up his duties for the duration of the war to devote his time to the motor transport service for the Detroit district as assistant to Maj. George D. Wilcox. He has been granted a leave of absence by the Ford organization.

Charles McKinstry, a roller at the plant of the Sharon Steel Hoop Co and its predecessor, the Youngstown Iron & Steel Co., Youngstown, O., for the past 13 years, has been made hot mill superintendent to succeed E. A. Phelan, who has resigned, effective Sept. 14. For five years Mr. Phelan was assistant to Superintendent C. B Cushwa, who recently resigned.

Louis J. Horowitz, former president of the Thompson-Starrett Construction Co., New York, has been appointed as special assistant to Chief of Ordnance Maj. Gen. C. C. Williams. Mr. Horowitz will have charge of tank production, with authority to decide all engineering, manufacturing and inspection questions which arise in the production of tanks.

Herbert Fryer, production engineer of the United States Shipping Board Emergency Fleet corporation, addressed the New England Foundrymen's association at its regular monthly meeting, Wednesday, Sept. 11, at the Exchange club, Boston. Mr. Fryer submitted facts and figures on what is being accomplished in the shipping and industrial world today.

JOHN WEARE

Walter J. Hodgkins, formerly manager of the construction department of the Ashland Light, Power & Street Railway Co., Ashland, Wis., has accepted appointment as general manager of the same interest to succeed F. R. Winders, who resigned. The Ashland company operates utilities in Ashland, Hurley, Washburn and Barksdale, Wis., and Ironwood, Wakefield and Bessemer, Mich.

Charles H. Tucker, who for some time was affiliated with the Toledo Bridge & Crane Co., Toledo, in an important capacity has resigned, and with William F. Billingsley and others has incorporated the American Crane & Engineering Co., that city. It is reported that the company has a government contract for locomotive cranes and it will build a plant for their manufacture.

Lucien I. Yeomans has been elected president of the Weiss Engine Co., 72 West Adams street, Chicago. Carl W. Weiss is vice president, and Charles B. Page, vice president and general manager. Mr. Weiss has been building oil engines of the Weiss type since 1894 and brings to this company the results of several years' laboratory work, which have brought about important improvements.

J. W. Wellington has been made general manager of the Dauch Mfg. Co., Sandusky, O., builder of tractors. Mr. Wellington formerly was production manager of the New Castle, Ind., plant of the Maxwell Motor Co., as well as of the Mathews Boat Co. L. E. Wilson has been made the company's general sales manager. He formerly was vice president in charge of sales of the Briscoe Motor Corp., Jackson, Mich.

James Taylor has resigned his connection as general manager and treasurer of the Latshaw Steel & Metal Products Corp., New York, and treasurer of the Pennsylvania Shafting Co., Spring City, Pa., and has become treasurer of the Steel Industries Corp., 261 Broadway, N. Y. R. Hueber has resigned as export manager of the Latshaw Steel & Metal Products Corp. to become secretary of the Steel Industries Corp.

C. F. Kelley, who has been made president of the Anaconda Copper Mining Co., is only 43 years old. He was graduated from the University of Michigan and began the general practice of law in Butte in 1898. Three years later he entered Anaconda's legal department and was appointed general counsel in 1908. In 1911 he was elected vice president and director of the company. Mr. Kelley is also president of International Smelting Co. and a director in various mining, railway and other enterprises. It has been assumed that John D. Ryan, who resigned as president to give all of his time to government aircraft, would also resign from his other corporate interests, which are numerous and include the presidency of the United Metals Selling Co., and a directorship in the American International Corp.

Shell Producers Buy Machine Tools

Present Demand for Equipment to be Superseded by Larger Requirements When Government Places Contracts for 33,000,000 Semisteel Shells—Railroads Enter Market For Small Lots—Shipyard Demand Not So Keen

EQUIPMENT for shell and gun-making plants comprises the week's demand for machine tools. That impetus will be given to demands of this character when the government places orders for 33,000,000 semisteel shells, is the expectation in the Pennsylvania, Ohio and Michigan districts, since these will require considerable machining. An eastern manufacturer is inquiring for 30 lathes for the production of 155-millimeter shells and Cribben & Sexton, Chicago stove manufacturers, recently purchased equipment for the same purpose including some special purpose machines which are being made by a Chicago manufacturer. The Eddy Foundry Co., Chicago, will devote its new plant for the building of shell-making machinery on a larger scale than heretofore. A Toronto, Ont., manufacturer is endeavoring to locate equipment, with which to execute a contract for 12-inch shells. Plant extension at New Haven, Conn., by the Winchester Repeating Arms Co., will involve, it is stated, approximately $500,000 worth of equipment, including some special screw machines. Small lot railroad buying continues. In the east, railroads are purchasing equipment on a steadily increasing scale, but no particularly large lots are involved. The Pennsylvania railroad continues to send out inquiries for tools for Logansport, Ind., and the Nickel Plate is endeavoring to locate five or six tools in the Cleveland market.

Shipbuilding continues to furnish its share of the demand. The American Shipbuilding Co., Cleveland, continues to purchase small equipment, but is filled up on its major requirements. Punching and shearing equipment has been ordered in Cleveland for shipment to a Chinese shipyard, which has a contract from the Emergency Fleet corporation and more equipment is desired. The New York Shipbiulding Corp., Camden, N. J., likewise placed orders recently for punching and shearing machinery.

Tools for the various cantonments to complete their machine shop requirements have been ordered from Manning, Maxwell & Moore, New York. These orders represent a considerable sum in the aggregate.

Machinery Buying Presaged by Projectile Program

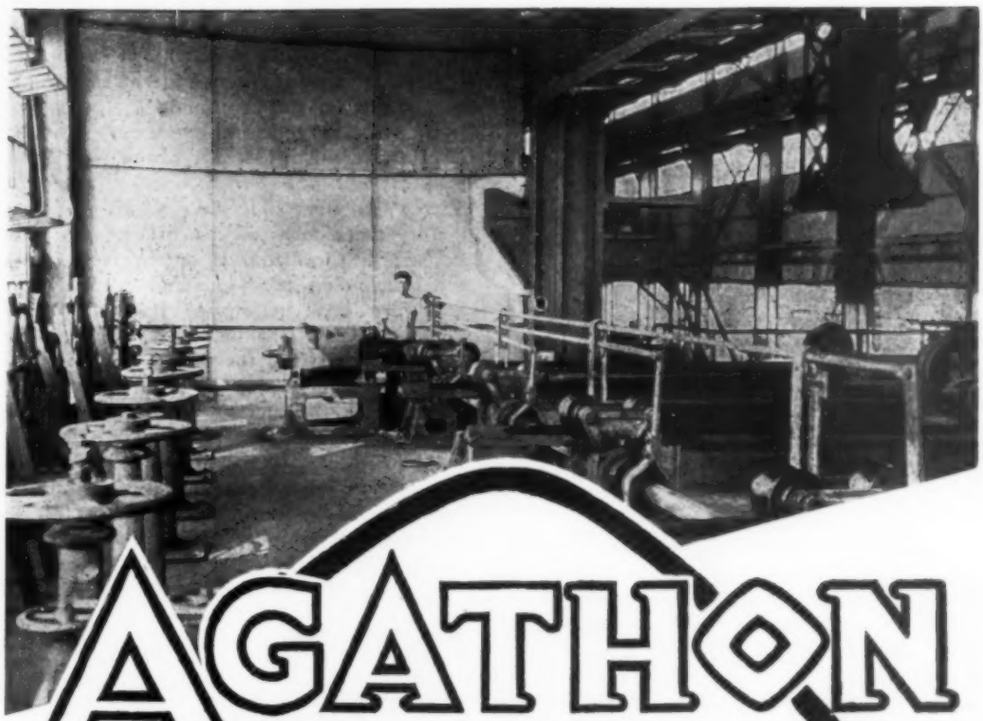
DEMAND in the eastern machine tool market has improved. A better volume of miscellaneous inquiry appears and the railroads are buying on a steadily increasing scale. These purchases, however, do not involve any particularly large lots.

The trade continues to evince much interest in the government's plans for increasing its shell program. During the past few days an inquiry has come out for 30 lathes for the production of 155 millimeter shells and a Toronto manufacturer has been negotiating on some equipment in anticipation of a 12-inch shell contract. Sellers generally, however, voice the opinion that manufacturers in the central west will figure chiefly in the further expansion of the government's projectile program.

Included in purchases of the past week is some punching and shearing equipment, involving about a dozen items, for shipment to China. The Robert Dollar Co., 17 Battery place, New York, bought this equipment from the Cleveland Punch & Shear Works for use in a Chinese shipyard, which is under contract with the Emergency Fleet corporation. The Dollar company is in the market for additional equipment for this yard, including three handpower cranes, reported last week. Another buyer of punching and shearing equipment is the New York Ship Building Corp., Camden, N. J., which placed 10 or 11 machines with the Cleveland Punch & Shear Works also. Manning, Maxwell & Moore, New York city, are understood to have received a contract from the war department for rounding out the machine tool equipment of the various cantonments throughout the country. While the individual requirements of the majority of the camps, with the possible exception of the aviation schools, are comparatively small, their needs in aggregate, it is said, involve a considerable number of tools.

Plans now are being formulated for expanding the plant of the Winchester Repeating Arms Co., New Haven, Conn. About a half million dollars worth of equipment will be required, including a number of screw machines of a special character. It is understood that a contract for the manufacture of these screw machines is being negotiated with the Southworth Machine Co., Portland, Me. The Franklin Mfg. Co., Syracuse, N. Y., which is engaged in the manufacture of crank shafts, is expected to be in the market shortly for an additional list of machine tools. The Federal Ship Building Co. will require a number of large turbine pumps for its proposed drydocks near Newark, N. J. Other equipment requirements will be small. The Marlin-Rockwell Corp. has bought a few miscellaneous tools for the newly purchased plant of the Richmond Radiator Co., Philadelphia.

The award of 10 overhead cranes of 20 tons capacity to the Milwaukee Electric Crane & Mfg. Co. and eight 5-ton overheads to the Northern Engineering Co., constitutes the largest crane buying of the past week. These cranes were placed by the Air Nitrates Co., New York city, for two government explosive plants in Ohio. The Federal Ship Building Co. bought two traveling cranes from the Northern Engineering Co. for its plant at Kearny, N. J. One crane is to be of 75 tons capacity, with two 50-ton trolleys, and the other a 4-motor crane of 20 tons. The Berwind-White Coal Co., Philadelphia, placed a 40-ton crane with the Cleveland Crane & En-



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C. H. Beach, District Sales Mgr.
Philadelphia Office—603 Widener Bldg.
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gineering Co. Another award was that of the American Radiator Co., Bayonne, N. J., for a 15-ton crane, with 17-foot span. Action on the 48 overhead cranes of 10 tons capacity for Neville island on which bids recently were received is expected the latter part of this week. Included in the few new inquiries are two 5-ton overhead cranes for the Philadelphia Rapid Transit Co.

Large Buying at a Standstill

LARGE buying of machine tools in the Chicago market is noticeably absent and even some deals which were thought to be reaching the closing point are hanging back. Most business now consists of small buying by shops which need a small amount of additional equipment or by larger shops which are filling out their requirements. Cribben & Sexton, stove manufacturers, who have taken a contract for 155-millimeter shells, have bought nearly all their equipment through dealers except a few special purpose machines, which are being made to their order by a Chicago manufacturer. The Eddy Foundry Co., which has been manufacturing lathes for some time, will devote its new plant to the manufacture of shellmaking machinery on a larger scale than in the past. One concern which has been in the market for about 50 shell finishing lathes is finding difficulty in covering its requirements promptly. The Northwestern Engineering Works, Green Bay, Wis., will build an addition to its fabricating shop.

Risers on Shells Promise Saw Orders

CHIEF interest in the Pittsburgh machinery trade centers in the probable requirements in connection with the 33,000,000 semisteel shells for which the government is seeking bids, since the great bulk of them, it is believed, will be turned out in foundries and machine shops in the tristate district. As the shells have risers coming from the mold, there is not much doubt that some big orders for saws are in prospect, and the requirements of other tools will doubtless be in the same proportion, since the shells will require considerable finishing as well as machining. Not a great deal of definite information is available about what the government requires in the manufacture of these semisteel shells and no contracts have yet been placed. Some developments, however, are looked for within a fortnight. Rolling mills seem pretty well covered and no new business of any account has come out. Railroad inquiries are few and far between. Neville island requirements continue to be guarded secretly; construction work, however is progressing steadily at the plant and announcement of award of 48 cranes is expected soon.

Miscellaneous Demand Fills Cleveland Market

MISCELLANEOUS inquiry is sufficient to keep Cleveland machine tool dealers as busy as they wish to be. These inquiries come from shell and gun-making plants in Ohio and Michigan and the railroads. The Nickel Plate railroad remains in the market for five or six tools, including a milling machine and the Pennsylvania railroad is asking for bids on five tools for Logansport, Ind., as follows: one each 18 and 20-inch heavy duty slotters, two 20-inch heavy duty back-geared crank shapers and one 8-inch crank slotting machine. The Victor R. Browning Co., which is about to build a 2-story machine shop with basement at 17701 Lake Shore boulevard, Cleveland, is in the market for some equipment including a 30-ton hydraulic press and is understood to have purchased one milling machine. The American Clay Machinery Co., Willoughby, O., desires a 3½-foot radial drill for shell work. Among a lot of miscellaneous equipment; the Dan Products Co., East 152nd street, is in the market for four plain milling machines, and two tapping machines. The Mitts & Merrell Co., Saginaw, Mich., wants a slab miller. Most dealers are unable to offer short-time deliveries but the Kearney & Trecker Co., has a large number of vertical milling machines for October delivery, several No. 2 and No. 3 milling machines for delivery in November and a few No. 1 and No. 1½ for December. This company recently sold some of its machines to the White Co., Cleveland, which is producing standardized trucks for the government.

The demand for used machinery is steady, although it is mostly for large machines and dealers are finding it increasingly difficult to locate the types desired. The Jahant Foundry & Heating Co., Akron, O., is in the market for one No. 1½ American vertical milling machine, one No. 120 Gardner grinder. The Woodard Machine Co., Wooster, O., desires a keyseater to cut keyways 2 or 2½ inches wide, one bolt cutter to thread bolts up to 3 inches in diameter, one power-driven hacksaw, capacity 8-inch round billet, one 10 or 12-foot vertical boring mill, one spur gear cutter of about 60 inches capacity and a large lathe with a long bed.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

PORTLAND, ME.—The Kellew-Spear Co. has been incorporated to do a general shipbuilding business with $750,000 capital, by F. B. Rowe, E. H. Irwin and H. M. Verrill.

DOVER, N. H.—The Boston & Maine Railroad will build a steel roundhouse and machine shop, to cost $275,000.

BOSTON—The Gillette Safety Razor Co. has let the contract for the superstructure of a steel and concrete, fireproof, 8-story, 74x167-foot addition to building E, South Boston, Mass., to cost $500,000.

BROOKLINE, MASS.—Bids will be received shortly by Architect T. J. Richie, Boston, on the construction of a 4-story, 60x100-foot factory. The name of the owner is withheld.

CHELSEA, MASS.—Plans have been completed by S. S. Eisenberg for a $12,000 casting shop 26x50x100 feet, for S. Slotnick.

EAST PEPPERELL, MASS.—The Nashua

WAR SAVINGS STAMPS

River Paper Co. has let the contract for a brick, 1-story, 31x52-foot hydro-electric power house, a reinforced concrete, 550-foot long dam, and an 8x500-foot penstock.

GLOUCESTER, MASS.—The Gloucester Block Co. has been incorporated to make hoisting apparatus and machinery with $90,000 capital by Harry A. Stiles, Wayne E. Stiles, Boston, and George C. Tarr.

LYNN, MASS.—The Strout, Stritter & Co., Inc., has been incorporated to make war munitions with $100,000 capital by Allen F. Strout, Carl L. Felsenheld, Nahant, Mass., and Karl A. Stritter.

NEW BEDFORD, MASS.—The New Bedford Cordage Co. let the contract for a brick, mill construction, 1-story, 30x65-foot storehouse.

UXBRIDGE, MASS.—The E. D. Ward Co., Worcester, Mass., has the contract for constructing a 3-story, 44x52-foot building at the plant of the Allendale Mill Co.

WESTFIELD, MASS.—The H. B. Smith Co. let the contract for a brick, mill construction, 2-story, 27x34-foot addition.

WESTFIELD, MASS.—The United States Whip Co. has let the contract for a brick, mill construction, 2-story, 40x100-foot storehouse.

WORCESTER, MASS.—Plans are being figured for a 1-story addition to the Edgeworth Mill, owned by the M. J. Whittall and associates.

NEWPORT, R. I.—Bids close Sept. 23 for a brick and concrete, 2-story, 35x80-foot shop and storage building at the naval hospital reservation for the navy department.

NEWPORT, R. I.—Plans are being figured for heating and refrigerating plants to cost $1,000,000 for the government at the United States naval station, Coddington Point, R. I.

NEWPORT, R. I.—The navy department has let the contract for the erection of a steel, fireproof, 2-story, 50x178-foot storehouse at the naval training station to cost $90,000.

PROVIDENCE, R. I.—The Nicholson File Co. will build two brick, 1-story, 22x49-foot and 25-31-foot additions.

PROVIDENCE, R. I.—The Rhode Island Motor Mart has let the contract for a brick, mill construction, fireproof, 57x108-foot addition.

BRIDGEPORT, CONN.—The New York, New Haven & Hartford railroad will build a brick, 32-foot extension to its engine house to cost $75,000.

STAMFORD, CONN.—The Universal Stamping Machine Co. contemplates erecting a $12,000 plant addition, 1-story, 40x150 feet.

STAMFORD, CONN.—The contract for the erection of a 6-story, 50x261-foot addition to the Yale-Towne Mfg. Co., has been awarded the American Concrete Co.

WATERBURY, CONN.—Work on a $40,000 addition, 1-story, 40x320 feet, to the Chase Metal Works, will be started shortly.

WATERBURY, CONN.—The Waterbury Buckle Co. will build a brick, mill construction, 46x109-foot factory building to cost $30,000.

Along the Middle Atlantic Seaboard

BROOKLYN, N. Y.—The Jay & Johnson Corp. is planning alterations at its plant costing $50,000. Henry Holder, 242 Franklin avenue, is architect.

BROOKLYN, N. Y.—A $65,000 factory building, three stories, 100x100 feet, will be built at 191 Montague street, by Samuel W. Peck, 806 Broadway, New York City.

BROOKLYN, N. Y.—The contract for the erection of a $50,000 foundry at the plant of Columbia Machine Works & Iron Co., 269 Chestnut street, has been awarded the Austin Co., 217 Broadway, New York.

BUFFALO—The Pierce Arrow Motor Car Co. has taken out a permit to build a steel boiler house at a cost of $60,000.

ILION, N. Y.—The Remington Arms Co. will erect a 1-story, 38x66-foot boiler house at its plant here.

NEW YORK—A $10,000 manufacturing building addition, 200x250 feet, will be erected by the Goodyear Rubber Insulated Co., 105 East 131st street.

OSWEGO, N. Y.—Plans are about completed for the erection of a building to replace the one damaged by fire recently at the plant of the Hessler Co. The new structure will cost about $40,000.

ROCHESTER, N. Y.—A 1-story, 60x65-foot fabricating shop will be erected at the plant of the Genesee Bridge Co.

YONKERS, N. Y.—The New York Engineering Co., 2 Rector street, New York, will erect a 1-story, 98x200-foot boiler house.

ERIE, PA.—The city building commission has been asked to issue to permit to the Modern Tool Co., for the erection of an addition to cost about $70,000.

MARITTA, PA.—The Pennsylvania railroad is negotiating for a site here for a roundhouse and railroad shops.

MERCER, PA.—The Mercer Gas & Water Co. has arranged to make important improvements to its plant here.

OIL CITY, PA.—The Mercer Silica Sand Co. has started work on extensive improvements to its plant at Leesburg Station.

PHILADELPHIA—Stone & Webster, Boston, are drawing plans for the proposed $10,000,000 power plant to be erected by the Philadelphia Electric Co.

PITTSBURGH, PA.—The Gibson King Co. has the contract for a $5000 addition to the plant of the Piso Co. on Neville Island, which will be used for a boiler plant.

PITTSBURGH—Citizens of Hooversville, near here, are to vote at the November election on bonds for the purchase of the Hooversville property of the United Light, Heat & Power Co.

READING, PA.—The Webber Hosiery Co. plans to build a plant in Boyerstown, Pa.

RUTHERFORD, PA.—The Reading Railway Co., Reading, Pa., is taking bids for a building here.

SHARON, PA.—The Peter Iron Works Co. has had plans prepared for an addition.

WARREN, PA.—Sweden G. Warner, 106 School street, will build a plant for the manufacture of gages.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

Two patternmaker's lathes, 5779½, South Charleston.
Six sensitive bench drills, 5798½, Portsmouth.
Three steel-threading machines, 5815½, Puget Sound.
One crank shaper, 5841½, New London.
Six milling machines, 5842½, South Charleston.
One bench lathe, 5864½, Norfolk.
Two vertical drill machines, 5940½, South Charleston.
Three slotting machines, 5941½, South Charleston.
Two electric cutting machines, 5942½, South Charleston.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

WRIGHTSVILLE, PA.—The Susquehanna Casting Co. has let the contract for a factory building on Walnut street, to D. P. Ashton, this city.

BORDENTOWN, N. J.—The board of commissioners will have two electrically driven centrifugal pumps and a 40-horsepower motor of the General Electric type installed at the municipal pumping station.

CAMDEN, N. J.—F. Boyer Co., River road, will erect a brick and concrete warehouse, 72x102 feet.

CAMDEN, N. J.—The Concrete Steel Co., Philadelphia, will erect a one-story, 50x120-foot addition.

CAMDEN, N. J.—Fire on Sept. 11 damaged the plate and angle shop and the power house of the New York Shipbuilding Co. plant causing a loss of nearly $200,000.

COLLINGSWOOD, N. J.—The New York Shipbuilding Co. awarded a contract to the Miles-Tiche Construction Co., Phillipsburg, for the construction of 1000 modern dwellings for employes.

EAST ORANGE, N. J.—The Franco-American Steel Corp. has been incorporated with $1,500,000 capital to manufacture steel products, by Harry H. Picking and others, of East Orange.

ELIZABETH, N. J.—A water plant, with a capacity of 20,000,000 gallons daily, will be erected at the junction of the Raritan and Millstone rivers by the Elizabethtown Water Co.

FREDRICKTOWN, N. J.—The ordnance department has purchased 2000 acres near here for the Delaware depot of the department. The depot will cost about $250,000.

HARRISON, N. J.—Plans are being drawn for an $85,000 plant addition for the Crucible Steel Co. of America.

JERSEY CITY, N. J.—The city commission let a contract to Riter & Conley, Pittsburgh, for furnishing 34,590 feet of 72-inch steel pipe to cost $828,533.

JERSEY CITY, N. J.—Manufacturers' Liability Insurance Co. has let a contract for new additions on Montgomery street to J. Jewkes & Sons Co. for $65,000.

THE NATION IS COUNTING ON SPEED

—Speed in the air, on the land, and on the sea—on the battle-fields of France, in the munition factories of our great cities—and on the vast agricultural fields of the country. Everywhere we must have SPEED—and then MORE SPEED.

And wherever extra speed is applied, there will be an unusual strain or exertion which must be met. Ordinary machines will not do—we are at war—we must have machines that will be able to keep up the pace set by the wheels of war.

TODAY—whether you are building airplanes, motor trucks or farm tractors, you must have castings of exceptional quality—you must have castings built to meet SPEED STRAINS.

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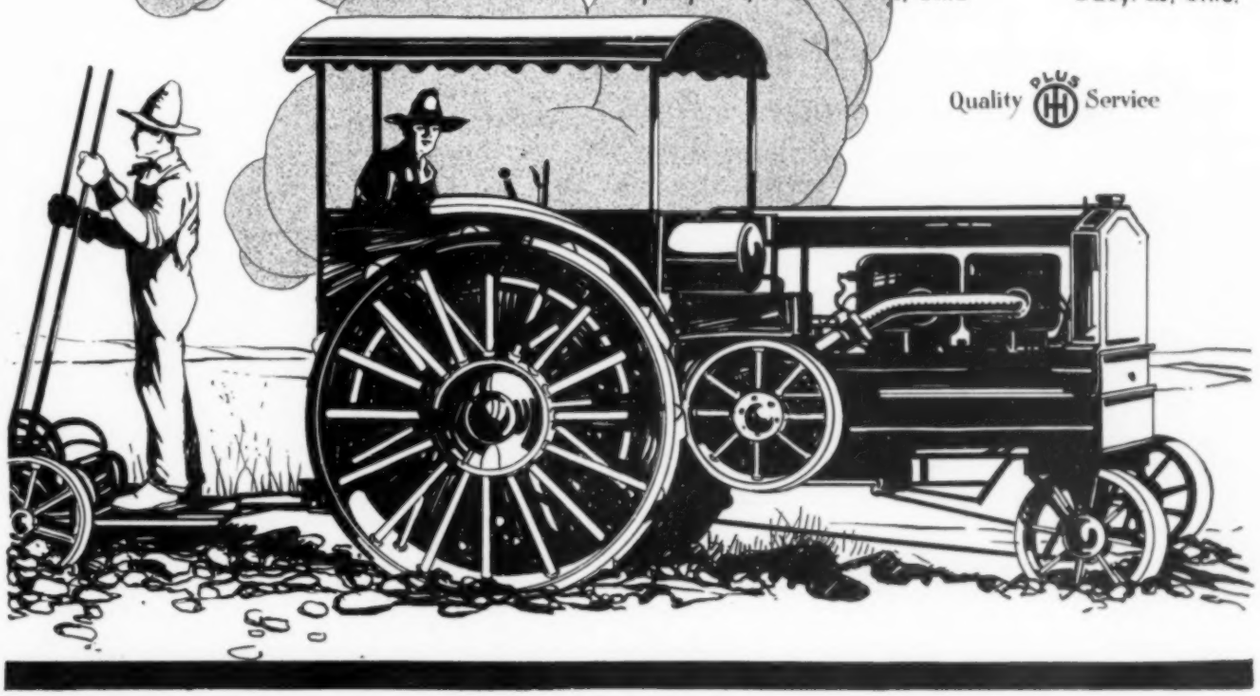


Activities in the Central States

APPLETON, WIS.—A. J. Sweet, consulting engineer, Milwaukee, has completed plans for a municipal street lighting system in Appleton, which will require from 140 to 150 ornamental pole fixtures.

CHETEK, WIS.—The Chetek Light, Power & Milling Co. disposed of its plant and business to the Rosholt interests of Eau Claire, Wis., which contemplates extensive enlargement of the hydro-electric and milling facilities. J. C. Phillips is the new manager.

CHIPPEWA FALLS, WIS.—The Chippewa Foundry & Machine Co. is building a 36-inch double stroke pump for the city of Nashwauk, Minn.

GRAND RAPIDS, WIS.—The Whitewater Bridge Co., Whitewater, Wis., has the contract for building a new steel and concrete bridge at the Hemlock site, in Hansen, Wood county.

GREEN BAY, WIS.—A cold storage and refrigerating plant, 75x100 feet, three stories, will be erected on North Broadway by Armour & Co., Chicago, at a cost of about $35,000.

HARTFORD, WIS.—The International Steel Products Co. will build a sheet metal working shop, costing $50,000.

JANESVILLE, WIS.—At a special election, a bond issue of $70,000 for the erection of a new bridge over the Rock river at Jackson street, was adopted.

JANESVILLE, WIS.—The Robert Gordon Co., 622 West Monroe street, Chicago, has the contract for the steam heating, ventilating and plumbing work in the $250,000 tractor manufacturing plant being erected by the General Motors Corp., Detroit.

KENOSHA, WIS.—Bids for the erection of the new Washington school, estimated to cost $150,000, will be received until Sept. 20, by Ella F. Powers, secretary board of education. It will be of reinforced concrete and brick, 150x180 feet, 2-story and basement. Architect John D. Chubb, Chicago, is supervising the project.

MANITOWOC, WIS.—The Manitowoc Shipbuilding Co. is undertaking extensive improvements.

MANITOWOC, WIS.—The Invincible Metal Furniture Co. has increased its capitalization from $50,000 to $100,000 to provide for additions.

MARINETTE, WIS.—The Northern Foundry Co., which opened a malleable and gray iron shop in the plant of the former Marinette Iron Works last fall, has purchased the adjoining buildings which will be used both for casting and machine work.

MILWAUKEE.—The Bayley Mfg. Co., 732 Greenbush street, will build a gray iron foundry, 63 x 108 feet, costing $20,000.

MILWAUKEE—The Smith Engineering Co., 1154 Thirty-second street, will build an addition, 66x100 feet, to cost $10,000.

MILWAUKEE — The city board of park commissioners will build an addition to its workshop, garage and stable building in Lake Park at an estimated cost of $20,000.

MILWAUKEE—Bids are being taken by the public sewerage commission for three 30-inch vertical centrifugal pumping engines, for the proposed new pumping station to be built on Jones Island, Milwaukee.

MILWAUKEE—The capital stock of the Pioneer Mfg. Co., 6703 Greenfield avenue, West Allis, has been increased from $5000 to $25,000. The concern is enlarging its machine shop facilities.

MILWAUKEE—The Fraser Co., 667 East Water street, mill and elevator engineer, has the general contract for planning and erecting a 4-story fireproof warehouse addition, 90x120 feet, for the Charles A. Krause Milling Co. at Burnham street and Thirty-seventh avenue.

MILWAUKEE — The National Brake & Electric Co. awarded a contract to Paul Riesen's Sons, 1018 Humboldt avenue, for consturcting a 275,000-gallon fuel oil storage tank, costing about $15,000. As already noted, the company is building a large addition to its iron and steel foundries.

NIAGARA, WIS.—The Niagara Electric Light & Power Co. has been organiezd with a capital stock of $50,000 to establish a light and power service for the village of Niagara.

WAUNAKEE, WIS.—The Elkert Bridge & Iron Works, Madison, Wis., has the contract for erecting a $5,000 bridge at this point.

BENTON HARBOR, MICH.—The Malleable Foundry Co. is building a foundry and machine shop, 42 x 60 feet and 62 x 83 feet. W. Robinson is superintendent.

DETROIT.—The Michigan Pattern & Machine Works, 1085 East Jefferson avenue, is building a plant, 62 x 90 feet, to cost $16,000.

HAMTRAMCK, MICH. — The Swedish Crucible Steel Co., Butler street, will build two foundries, 45 x 240 feet and 90 x 240 feet.

AURORA, ILL.—The Independent Pneumatic Tool Co. contemplates the erection of a scrap steel storage building and shipping platform, to cost $10,000. Davidson & Weiss, 53 West Jackson boulevard, Chicago, are the architects.

CHICAGO—The W. D. Allen Co., 563 West Lake street, will build a 1-story addition, 100x300 feet.

CHICAGO—The Ajax Tool Works, capitalized at $10,000, has been chartered by Axel E. Bolin, Axel F. Fryksdale and Karl R. Ackerlund.

CHICAGO—The Regal Metal Co., capitalized at $10,000, has been chartered by Joseph Rubens, Sidney B. Meyer and E. W. Colby.

CHICAGO—The Magnus Metal Co., 4041 Emerald avenue, has let a contract to the Barrett Construction Co. for remodeling and building an addition 50x100 feet, at a cost of $75,000.

CHICAGO—The Delaware Marine Engineering & Construction Co., capitalized at $10,000, has been chartered in Delaware to build and repair ships, by H. J. Baker, Andrew Frank and Charles G. Goetz, all of Chicago.

DECATUR, ILL.—The Liberty Gas & Engineering Co., capitalized at $100,000, has been chartered by John U. Donald, Chester Allen Smith, and Worcester C. Williams.

GALESBURG, ILL. — The Dependable Truck & Tractor Co. has bought a site and is having plans prepared for a plant. H. C. Pfaff is vice president.

BOONVILLE, IND.—The Graham Valve Co. will build a one-story factory, 50 x 235 feet.

CONNERSVILLE, IND.—The Indiana Lamp Co. is building a 2-story plant, 50 x 200 feet, to cost $150,000.

TERRE HAUTE, IND.—The Benbridge Foundry recently passed into the control of Samuel Greenburg and Frank Reynolds, who will enlarge the plant. A complete brass foundry and pattern shop is planned.

BRYAN, O.—The county commissioners recently passed a resolution to issue $40,000 in county bonds for building and repairing of bridges in the county.

CLEVELAND — Seven new buildings which will cost about $500,000, are to be erected under government supervision for the National Carbon Co.

CLYDE, O.—The plant of the Shoulder Excell Mfg. Co., manufacturer of electrical supplies, recently was badly damaged by fire.

DAYTON, O.—Permission to erect a $25,000 addition to its power house has been granted the National Cash Register Co. by the city building inspector.

FRANKLIN, O.—A proposition is on foot and 85 per cent of the rights of way have been obtained for harnessing the Little Miami river, to obtain power for electricity. The Little Miami Heat & Power Co., Cincinnati, has made surveys.

HAMILTON, O.—W. W. Crawford, clerk of the board of county commissioners, will close bids Sept. 25, for the construction of a concrete steel bridge in Madison township.

LIMA, O.—The plant of the East Iron & Machine Co. recently was slightly damaged by fire. Contracts for the repairing of the damaged building have already been let.

MANSFIELD, O.—Permits have been issued to the American Steel & Machinery Co. for the erection of three additions to cost about $100,000.

MARION, O.—V. E. Garfield, clerk of the board of county commissioners, will open bids Sept. 26, for the erection of a girder bridge over the Little Scioto river.

MIDDLETOWN, O.—The Multi-Colortype Co., recently incorporated for $200,000, will open a factory for the manufacture of paper containers.

NORWALK, O.—The Firelands Elevator Co. recently announced that a $30,000 elevator would be erected here this winter if materials can be obtained.

PAINESVILLE, O.—The county auditor will open bids Oct. 2 for the repairing of several bridges in the county.

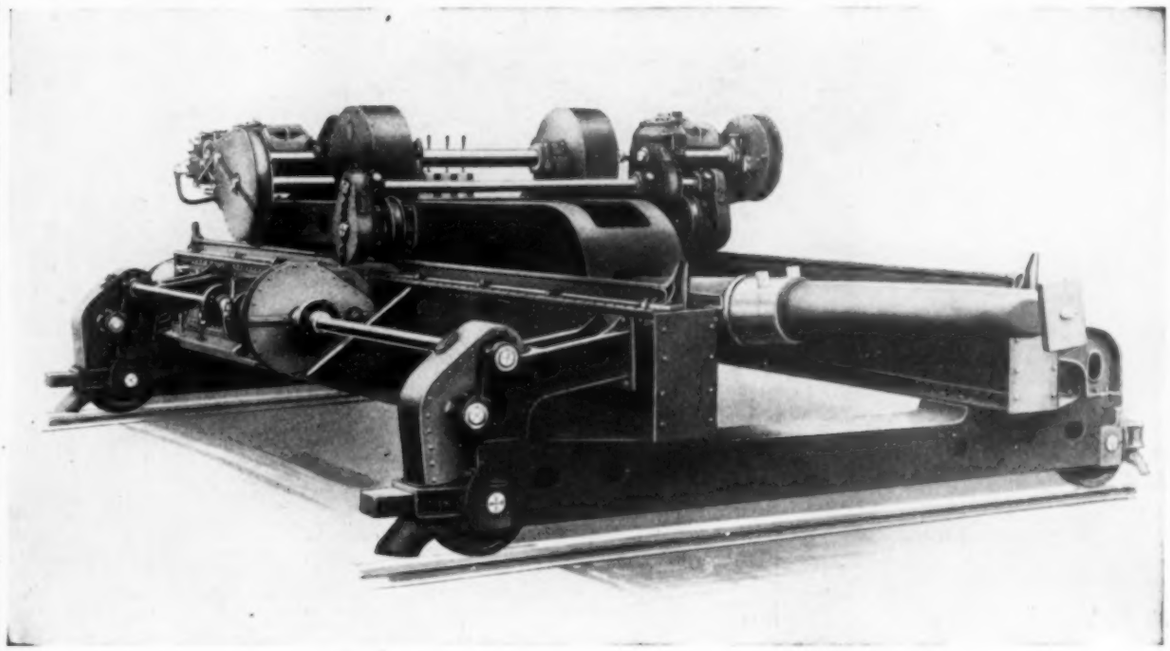
RAVENNA, O.—Edward Pinney has been employed by the county commissioners to build a bridge in Paris township.

TOLEDO, O.—The Toledo Screw Products Co. is contemplating the erection of a $25,000 addition, 1-story, 40x200 feet. The company's plant is at 2235 Smead avenue.

TOLEDO, O.—The American Crane & Engineering Co. recently was incorporated by Charles H. Tucker, W. F. Billingsley and others, with $50,000 capital. The work of obtaining a site for a plant is now under way.

HUNTINGTON, W. VA.—The McCombs Oil Co. has bought the plant of the Consolidated Oil & Refining Co. at East St. Louis, Ill., and will ship it to Torrent, Ky., where it will be re-erected.

STEEL PLANT EQUIPMENT
COKE OVEN MACHINERY
GAS PRODUCERS
ORE AND COAL HANDLING MACHINERY
SPECIAL CRANES
MINING MACHINERY
HYDRAULIC TURBINES



Charging Machines

The Wellman-Seaver-Morgan Company originated, first built, developed, and for many years was the sole constructor of mechanical chargers for open hearth furnaces.

The W-S-M Low Type Charger is pictured above. Some conditions indicate the use of the High Type Charger or the Crane Type.

We are prepared to build a special machine for your particular requirements.

Bulletin A 7, "W-S-M Charging Machines and Manipulators," will be sent on request.

THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U.S.A.

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports	
Old range Bessemer, 55 iron	$6.40
Mesabi Bessemer, 55 iron	6.15
Old range non-Bess., 51½ iron	5.65
Mesabi non-Bess., 51½ iron	5.50

WAREHOUSE PRICES

Steel bars, Chicago	4.17c
Steel bars, Cleveland	4.07c
Steel bars, Detroit	4.13c
Steel bars, Philadelphia	4.13c
Steel bars, New York	4.145c
Steel bars, St. Louis	4.24c
Steel bars, Cincinnati	4.13c
Steel bars, St. Paul	4.395c
Steel bars, Buffalo	4.10c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	4.10c
Iron bars, Cleveland	4.67c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.24c
Iron bars, Cincinnati	4.13c
Iron bars, Philadelphia	4.60c to 4.73c
Iron bars, New York	4.745c
Shapes, Chicago	4.27c
Shapes, Detroit	4.23c
Shapes, St. Louis	4.34c
Shapes, St. Paul	4.495c
Shapes, New York	4.245c
Shapes, Cleveland	4.17c
Shapes, Philadelphia	4.23c
Shapes, Buffalo	4.20c
Shapes, Cincinnati	4.23c
Plates, Buffalo	4.45c
Plates, Chicago	4.52c
Plates, Detroit	4.48c
Plates, St. Louis	4.59c
Plates, St. Paul	4.745c
Plates, New York	4.495c
Plates, Cleveland	4.42c
Plates, Philadelphia	4.48c
Plates, Cincinnati	4.48c
No. 10 blue anl. sheets, Chi.	5.52c
No. 10 blue anl. sheets, Cleve.	5.42c
No. 10 blue anl., Buffalo	5.45c
No. 10 blue anl., sheets, St. L.	5.59c
No. 10 blue anl. sheets, Cinci.	5.48c
No. 10 blue anl. sheets, St. Paul	5.745c
No. 10 blue anl. sh., Detroit	5.48c
No. 28 black sheets, Chgo.	6.27c
No. 28 black sheets, Cleve.	6.42c
No. 28 black sheets, Cinci.	6.48c
No. 28 black, Detroit	6.48c
No. 28 black sheets, St. L.	6.59c
No. 28 black sheets, St. Paul	6.745c
No. 28 galv. sheets, Chgo.	7.52c
No. 28 galv. sheets, Cleve.	7.67c
No. 28 galv. sheets, Cinci.	7.73c
No. 28 galvanized, Detroit	7.73c
No. 28 galv. sheets, St. L.	7.59c
No. 28 galv. sheets, Buffalo	7.70c
Hoops, Cleveland	4.92c
Hoops, Detroit	4.98c
Hoops, Buffalo	4.95c
Cold rolled sheets, Buffalo	6.45c
Cold rolled steel	list and 10

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$23.00 to 23.50
Bundled sheets, Pittsburgh	22.00
Bundled sheets, Cleveland	27.00 to 28.00
Bundled sheets, Buffalo	24.00 to 25.00
Boiler plate, cut, No. 1, Chg.	27.50 to 28.50
Boiler plate, cut, No. 1, St. L.	25.50 to 26.00
Frogs, switches, guards, St. L.	28.50 to 29.00
Frogs, switches, guards, Chgo.	29.00
Heavy melting steel, Pitts.	29.00
Heavy melting steel, Buffalo	30.00
Heavy melting steel, Chgo.	29.00
Heavy melt'g steel, Cleveland	29.00
Heavy melting steel, Cinci.	28.00 to 28.50
Heavy melt'g steel, east. Pa.	28.00 to 29.00
Heavy melting steel, N. Y.	26.00
Heavy melting steel, St. L.	28.50 to 29.00
Heavy melt'g steel, Birming.	27.00 to 27.50
Baled sheets, Cleveland	28.50 to 29.00
Baled sheets, Pitts.	26.00
Baled sheets, Chgo.	29.00
Knuckles, couplers, Chgo.	34.00
Knuckles, coup., St. Louis	33.00 to 33.50
Low phos. steel, Buffalo	37.50
Low phos. steel, Pittsburgh	39.00
Low phos. crops eastern Pa.	39.00
Low phos. guaranteed E. Pa.	36.50
Shoveling steel, Chicago	29.00
Shoveling steel, St. Louis	28.00 to 28.50
Springs, Chgo.	34.00
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	34.00
Steel rails, short, St. Louis	33.50 to 34.00
Steel rails, old, Birmingham	29.00 to 30.00
Stove plate, Chgo.	28.00 to 28.50
Stove plate, Cincinnati	22.50 to 23.00
Stove plate, St. Louis	26.00 to 27.00
Stove plate, N. J. points	27.25
Stove plate, Birmingham	25.00 to 26.00
Stove plate, Buffalo	27.50 to 28.00
Stove plate, eastern Pa.	29.00
Stove plate, Cleveland	26.50 to 27.50
Stove plate, Pittsburgh	26.50 to 27.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.40
Boston	4.60
Philadelphia	4.10
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$7.50
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York (r. and w.)	7.50
Philadelphia (r. and w.)	6.60
Pittsburgh	6.10
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.75
Cincinnati	1.75
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70
Duluth, Minn., to:	
Minneapolis, St. Paul	$1.60
Mayville, Wis.:	
Minneapolis-St. Paul	$2.20

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	24.5 cents
Philadelphia	23.0 cents
Boston	27.0 cents
Buffalo	21.5 cents
Baltimore	22.5 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	56.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Angle bars, iron, Chgo.	39.00
Angle bars, steel, St. Louis	32.00 to 32.50
Angle splice bars, St. Louis (iron)	37.50 to 38.00
Arch bars, transoms, Chgo.	45.50 to 46.50
Arch bars and transoms, St. Louis	45.50 to 46.00
Busheling, No. 1, Cleveland	30.50 to 31.50
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 2, Buffalo	21.00 to 23.00
Busheling, No. 1, Pittsburgh	32.00
Busheling, No. 1, Cincinnati	26.00 to 26.50
Busheling, No. 1, Chgo.	30.50 to 31.00
Busheling, No. 2, Chgo.	20.50 to 21.50
Busheling, No. 1, St. Louis	29.00 to 29.50
Cast borings, New York	16.25 to 16.75
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast, borings, Cleveland	19.00
Cast borings, Cincinnati	16.50 to 17.00
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	17.00 to 18.00
Cast borings, Chgo.	18.50 to 19.00
Cast borings, St. Louis	18.50 to 19.00
City wrought, long, N. Y.	30.00
Cut forge, Chgo.	32.50 to 33.00
Forge flashings, small, Cleve.	29.00 to 30.00
Forge flashings, large, Cleve.	27.50 to 28.00
Forge No. 1, eastern Pa.	28.00 to 29.00
Grate bars, Buffalo	27.50 to 28.00
Grate bars, Cleveland	27.00 to 28.00
Grate bars, N. J. points	27.25
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	43.50 to 44.00
Iron axles, Cleveland	46.50
Iron axles, Chicago	46.50
Iron axles, eastern Pa.	46.50
Iron axles, St. Louis	46.00 to 46.50
Iron axles, Buffalo	45.00 to 47.00
Iron rails, Chicago	39.00
Iron rails, Buffalo	36.00 to 37.00
Iron rails, Cincinnati	34.00 to 35.00
Iron rails, St. Louis	38.50 to 39.00
Iron rails, Cleveland	37.00 to 38.00
Machine turnings, Cincinnati	17.00 to 17.50
Machine turnings, Cleve.	19.00
Machine turnings, Buffalo	17.00 to 17.50
Machine turnings, N. Y.	16.25 to 16.75
Machine turnings, Pitts.	18.00 to 19.00
Machine turnings, east. Pa.	19.00
Machine turnings, Birming.	16.00 to 17.00
Machine turnings, Chicago	18.00 to 18.50
Machine shop turnings, St. L.	18.50 to 19.00
Pipes and flues, Cleveland	28.00 to 29.00
Pipes and flues, Chicago	28.00 to 28.50
Pipes and flues, St. Louis	27.50 to 28.00
R. R. mch. cast, No. 1, Buff.	34.00
R. R. wrgt. No. 1, Buffalo	34.00
R. R. wrgt., No. 1, east Pa.	34.00
Railroad wrgt. No. 1 Cinci.	33.50 to 34.00
Railroad wrgt., No. 1, Cleve.	34.00
R. R. wrought, No 1, Pitts.	34.00
Railroad wrgt., No. 2, Chgo.	32.50 to 33.00
Railroad wrought, No. 1, Chgo.	33.50 to 34.00
R. R. wrgt. No. 1, Birming.	30.00 to 34.00
No. 1 yard wrought East Pa.	33.00
No. 1 busheling wrgt., E. Pa.	31.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. L.	33.50 to 34.00
Railroad wrought, No. 2	32.50 to 33.00
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, eastern Pa.	33.00
Wrought pipe, ungraded, eastern Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	24.00
Heavy axle turn'gs, E. Pa.	24.00
Heavy axle turnings, Pitts.	24.00
Shafting, New York	35.50
Shafting, eastern Pa.	39.00
Steel car axles, Pittsburgh	46.50
Steel car axles, Birmingham	38.00 to 40.00
Steel car axles, New York	43.00
Steel car axles, Buffalo	44.00 to 46.00
Steel car axles, Cleveland	44.00
Steel car axles, eastern Pa.	46.50
Steel car axles, Chgo.	46.50
Shafting, St. Louis	38.00 to 39.00
Steel car axles, St. Louis	46.00 to 46.50

IRON FOUNDRY USE

Car wheels, (iron), Pitts.	$29.00
Car wheels, (steel), Pitts.	34.00 to 35.00
Car wheels, eastern Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	29.00 to 30.00
Car wheels, Cleveland	30.00
Tram car wheels, Birming.	28.00 to 29.00
Cast, No. 1, Birmingham	30.00 to 33.00
Cast, No. 1, cupola east. Pa.	34.00
Cast, No. 1, Cleveland	33.00 to 34.00
Cast, No. 1, Cincinnati	33.00 to 34.00
Cast, 1, heavy, N. Y.	32.25 to 32.50
Cast, 1, machy., N. Y.	32.25 to 32.50
Cast, No. 1, Chicago	34.00
Cast, No. 1, Pittsburgh	32.50 to 33.00
Cast, No. 1, St. Louis	32.00 to 32.50
Malleable, Cincinnati	30.00 to 34.00
Malleable, Cleveland	30.00 to 34.00
Malleable, Buffalo	29.00 to 34.00
Malleable, Pittsburgh	33.00 to 34.00
Malleable, east. Pa.	29.00
Malleable, cupola, East Pa.	33.00
Malleable railroad, Chgo.	34.00
Malleable, agricultural, Chgo.	33.00 to 33.25
Malleable railroad, St. Louis	32.00 to 32.50
Malleable agricultural, St. L.	31.50 to 32.00

MISCELLANEOUS USES

Boiler punchings, Chgo.	36.00 to 36.50
Reroll. rails, 5 ft. & ov., Pitts.	34.00
Reroll. rails, 5 ft. & ov., Chgo.	34.00
Reroll. rails, 5 ft. & ov., E. Pa.	34.00
Reroll. rails, 5 ft. & ov., St. L.	33.50 to 34.00
Reroll. rails, 5 ft. or over, Cleve.	34.00
Rerolling rails, long, Birm.	37.50 to 38.50
Locomotive tires, Chgo.	45.50 to 46.50
Locomotive tires, St. Louis	43.50 to 44.00